

## Environmental Assessment Checklist

**Project Name: Beetlejuice Timber Sale**  
**Proposed Implementation Date: July 2024**  
**Proponent: Missoula Unit, Southwest Land Office, Montana DNRC**  
**County: Missoula**

### Type and Purpose of Action

**Description of Proposed Action:**

The Missoula Unit of the Montana Department of Natural Resources and Conservation (DNRC) is proposing forest management activities on approximately 516 acres known as the Beetlejuice Timber Sale Project. The project is located approximately 7 aerial miles east of Clinton Montana in the Cramer Creek area of the Clark Fork Valley (refer to Attachments vicinity map **A-1** and project map **A-2**) and includes the following sections:

Beneficiary	Legal Description	Total Acres	Treated Acres
Common Schools	Section 2 T11N R16W Section 36 T12N R16W	318 635	65 451
	<b>Total</b>	<b>953</b>	<b>516</b>
Public Buildings			
MSU 2 <sup>nd</sup> Grant			
MSU Morrill			
Eastern College-MSU/Western College-U of M			
Montana Tech			
University of Montana			
School for the Deaf and Blind			
Pine Hills School			
Veterans Home			
Public Land Trust			
Acquired Land			

**Objectives of the project include:**

- Generate revenue for the Common Schools Trust.
- Improve stand health and vigor by reducing basal area and preferring early seral species for retention (ponderosa pine and western larch).
- Prefer unhealthy, suppressed Douglas-fir for removal before economic value is lost to insect and disease damage.

- Reduce fuel loading and the likelihood of a stand replacing fire.

**Proposed activities include:**

Action	Quantity
<b>Proposed Harvest Activities</b>	<b># Acres</b>
Clearcut	
Seed Tree	
Shelterwood	
Selection	454
Old Growth Maintenance/Restoration	
Commercial Thinning	13
Salvage	
<b>Total Treatment Acres</b>	<b>467</b>
<b>Proposed Forest Improvement Treatment</b>	<b># Acres</b>
Pre-commercial Thinning	49
Site preparation/scarification/RX Burn	221
Planting	
<b>Proposed Road Activities</b>	<b># Miles</b>
New permanent road construction	1.4
New temporary road construction	0.3
Road maintenance	9.2
Road reconstruction	
Road abandoned	
Road reclaimed	
<b>Other Activities</b>	
<b>Duration of Activities:</b>	3-6 years
<b>Implementation Period:</b>	2024 -2030

The lands involved in this proposed project are held in trust by the State of Montana. (Enabling Act of February 22, 1889; 1972 Montana Constitution, Article X, Section 11). The Board of Land Commissioners and the DNRC are required by law to administer these trust lands to produce the largest measure of reasonable and legitimate return over the long run for the beneficiary institutions (Section 77-1-202, MCA).

The DNRC would manage lands involved in this project in accordance with:

- The State Forest Land Management Plan (DNRC 1996),
- Administrative Rules for Forest Management (ARM 36.11.401 through 471),
- The Montana DNRC Forested State Trust Lands Habitat Conservation Plan (HCP) (DNRC 2010)
- and all other applicable state and federal laws.

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## Project Development

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### SCOPING:

- DATE:
  - January 16, 2024
- PUBLIC SCOPED:
  - The scoping notice was posted on the DNRC Website:  
<https://dnrc.mt.gov/News/scoping-notice>
  - The scoping notice was sent to 29 adjacent landowners (within a one mile radius). FMB additionally sent scoping notices to interested parties enrolled on the statewide scoping list.
- AGENCIES SCOPED:
  - Montana Fish, Wildlife and Parks (FWP)
  - Statewide Tribal Agencies
  - Internal Department of Natural Resources and Conservation Staff
- COMMENTS RECEIVED:
  - FWP expressed support for the project, while suggesting mitigations to help offset potential negative impacts to wildlife and their respective habitats (primarily bears; both black bears and grizzly bears). FWP also commented as a reminder; DNRC should expect recreation traffic near Beavertail FAS and that parking of logging or other project equipment in FWP sites will not be allowed without a permit.
- DNRC RESPONSE:
  - The DNRC would like to thank all parties for their comments. All comments were taken into consideration during project planning and development.
  - Montana Fish, Wildlife, and Parks  
A DNRC Wildlife Biologist was a key member of the project ID team during project development of the Action Alternative. Anticipated wildlife impacts and mitigations of the Action Alternative can be found in the Wildlife section of this EA. The proposed new road(s) would be gated, restricting motorized access. The DNRC will not authorize the use of the Beavertail FAS during operations of the proposed Action Alternative.

DNRC specialists were consulted, including:

Scott Allen – Project Lead/Forester

Patrick Rennie – Archaeologist

Garrett Schairer – Wildlife Biologist

Andrea Stanley – Soils Scientist/Hydrologist

Internal and external issues and concerns were incorporated into project planning and design and will be implemented in associated contracts.

### OTHER GOVERNMENTAL AGENCIES WITH JURISDICTION, LIST OF PERMITS

**NEEDED:** *(Conservation Easements, Army Corps of Engineers, road use permits, etc.)*

- **United States Fish & Wildlife Service-** DNRC is managing the habitats of threatened and endangered species on this project by implementing the Montana DNRC Forested

Trust Lands HCP and the associated Incidental Take Permit that was issued by the United States Fish & Wildlife Service (USFWS) in February of 2012 under Section 10 of the Endangered Species Act. The HCP identifies specific conservation strategies for managing the habitats of grizzly bear, Canada lynx, and three fish species: bull trout, westslope cutthroat trout, and Columbia redband trout. This project complies with the HCP. The HCP can be found at <https://dnrc.mt.gov/TrustLand/about/planning-and-reports>.

- **Montana Department of Environmental Quality (DEQ)-** DNRC is classified as a major open burner by DEQ and is issued a permit from DEQ to conduct burning activities on state lands managed by DNRC. As a major open-burning permit holder, DNRC agrees to comply with the limitations and conditions of the permit.
- **Montana/Idaho Airshed Group-** The DNRC is a member of the Montana/Idaho Airshed Group which was formed to minimize or prevent smoke impacts while using fire to accomplish land management objectives and/or fuel hazard reduction (Montana/Idaho Airshed Group 2010). As a member, DNRC must submit a list of planned burns to the Airshed Group's Smoke Monitoring Unit describing the type of burn to be conducted, the size of the burn in acres, the estimated fuel loading in tons/acre, and the location and elevation of each burn site. The Smoke Monitoring Unit provides timely restriction messages by airshed. DNRC is required to abide by those restrictions and burn only when granted approval by the Smoke Monitoring Unit when forecasted conditions are conducive to good smoke dispersion.

## **ALTERNATIVES CONSIDERED:**

### **No-Action Alternative:**

- No commercial harvest, road construction, pre-commercial thinning, weed spraying, site preparation, or road maintenance/improvement would occur at this time.
- Overall stand growth and vigor would continue to be suppressed due to overstocked stands. Stands would trend away from DNRC future desired conditions based on historic fire regimes.
- Unhealthy, suppressed Douglas-fir would likely succumb to insect and disease encumbering the economic value of the trees.
- Increased fuel loading would increase the likelihood of a crown fire and mortality across all species and age classes.

### **Action Alternative:**

- A commercial timber harvest would take place to remove approximately 3 million board feet (MMBF) of timber. Timber would be harvested using both ground-based and skyline harvest methods. Silvicultural prescriptions would be developed to meet DNRC desired future conditions (DFCs).
- Approximately 1.4 miles of permanent road construction and 0.3 miles of temporary road construction would take place (newly constructed roads would be open for administrative use only).
- Road maintenance and improvements would take place on roads used (approximately 9.2 miles) for log hauling and timber-harvest.
- Precommercial thinning of 49 acres would be conducted to improve the growth and vigor of advanced regeneration.
- Herbicide application would occur as needed during project implementation.

- Slash pile burning as well as prescribed broadcast burning would occur to meet site preparation objectives prior to planting of early seral species such as western larch (WL) and ponderosa pine (PP).

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## Impacts on the Physical Environment

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Evaluation of the impacts on the No-Action and Action Alternatives including **direct, secondary, and cumulative** impacts on the Physical Environment.

### VEGETATION:

The Project Area falls within climatic section 332B, which was historically 79% forested. (Losensky, 1997). This Project area ranges in elevation from 3,800'-6,000'.

History: The Project Area was last harvested in 2015 as part of the Beavertail Beetles Timber Sale. The objectives of the Beavertail Beetles project were to salvage bark beetle infested ponderosa pine, reduce stand density by removing ponderosa pine high in defect and/or susceptible to beetle infestation, increase stand growth and vigor, as well as generate revenue for the Common School Trust. The proposed Action Alternative is not a re-entry of the stands managed under the Beavertail Beetles project.

### **Vegetation Existing Conditions:** (see also Attachment B Unit Prescriptions)

For descriptive purposes, SLI (stand level inventory) delineated stands within the Project Area have been grouped within their respective proposed harvest units. Descriptions of the current stand conditions coincide with the proposed Action Alternative harvest units (Map A-2: Timber Sale Harvest Units).

#### **Unit 1**

Stands within Unit 1 consist primarily of two differing stands delineated by an aspect break: a south-southeast facing aspect and a north-northwest facing aspect. The drier south-southeast aspect consists of an uneven-aged multistoried forest type. Large (greater than 12-inch dbh) relic ponderosa pine (PP) from previous cuts, as well as regeneration initiated during previous harvests, dominate the overstory. Large Douglas-fir (DF) are also members of the overstory. Most (80%) of the DF show signs of reduced vigor in the form of faded crowns and red needles. The mid-level canopy is a multi-age mix of 80% DF and 20% PP. Regeneration consists primarily of clumps of DF. The north-northwest facing portion of the unit consists primarily of one older class strata: DF 80%, WL 15%, and PP 5%. Large Douglas-fir (DF) are also members of the overstory. Most (80%) of the DF show signs of reduced vigor in the form of faded crowns and red needles. Regeneration is very low to non-existent but consists primarily of DF advanced regeneration. Douglas-fir defoliators and signs of rot are apparent and stand vigor is low. Knapweed is established within both stands, but primarily south aspects or flat benches. Some cheatgrass was observed within the unit.

#### **Unit 2**

Large (greater than 12-inch dbh) relic ponderosa pine (PP) from previous cuts, as well as regeneration initiated during previous harvests, dominate the overstory. Large Douglas-fir (DF) and a few scattered western larch (WL) are also members of the overstory. In portions where

large (greater than 12-inch dbh) DF consist of more than 20% of the overstory, the DF shows signs a loss of vigor and appears very unhealthy, showing signs of faded crowns with little to no growth. The mid-level canopy is a multi-age mix of 80% DF and 20% PP. Regeneration consists primarily of clumps of DF. The east facing portion of the unit consists primarily of two strata: DF 40%, PP 35%, and WL 5%. Most regeneration is comprised of advanced Douglas-fir. Douglas-fir bark beetles are very active and have been the cause of noticeable mortality. Knapweed and some cheatgrass are established within the unit.

### **Unit 3 and 4**

Both Unit 3 and Unit 4 consist of a SW aspect stand(s) with multiple (uneven-aged) strata consisting of approximately 70% ponderosa pine and 30% Douglas-fir throughout the 3 strata. Natural openings of non-stocked areas are scattered throughout the unit. There are low to moderate stocking levels in the upper strata or largest size class. The majority of the stems present represent the middle strata. The regeneration (youngest strata) has low to moderate stocking levels. Knapweed and some cheatgrass are established within the unit.

### **Unit 5**

Unit 5 consists of a mix of two differing uneven-aged stands delineated primarily on aspect. The portions of the unit that are more westerly and northerly facing consist of a Douglas-fir dominated overstory, mid-level strata, and regeneration (approximately 70% DF), with PP also present (approximately 30%). The portions of the unit on a southern aspect consist of a ponderosa pine dominated over-story (approximately 70%) with Douglas-fir (approximately 30%). The mid-tiered strata, as well as the regeneration, is represented more predominately by Douglas-fir (approximately 80% DF 20% PP). All species across the unit show signs of reduced vigor and insect and disease damage due to competition for resources. Knapweed and some cheatgrass are established within the unit.

### **Unit 6**

Unit 6 consists of a relatively uniform stand of 6-12" DBH ponderosa pine. At this time the unit appears healthy but has low to medium vigor due to overstocking.

Harvest Unit	Habitat Group	Fire Regime	Current Cover Type	Age Class (years)	DFC	RX	Acres
1	Warm and moist (westside)	Mixed	Douglas Fir	100-149	Western Larch/Douglas Fir	Individual/Select Tree Harvest	147
2	Warm and Dry (westside)	Low	Douglas Fir	100-149	Ponderosa Pine	Individual/Select Tree Harvest	220
3	Warm and Dry (westside)	Low	Ponderosa Pine	100-149	Ponderosa Pine	Individual/Select Tree Harvest	24
4	Warm and Dry (westside)	Low	Ponderosa Pine	100-149	Ponderosa Pine	Individual/Select Tree Harvest	11
5	Warm and dry (eastside)	Low	Ponderosa Pine	100-149	Ponderosa Pine	Individual/Select Tree Harvest	52
6	Warm and Dry (westside)	Low	Ponderosa Pine	40-99	Ponderosa Pine	Commercial Thinning	13

**Fire Hazard/Fuels:** The Project Area is located within the Montana Forest Action Plan's wildfire risk priority area as of Jan 1, 2024. The Project Area (primarily Units 1 and 5) continue to have crown continuity and high amounts of dead and dying fuel loading. The fuel loading is exacerbated by the steep slope (averaging 50%). This poses a major hazard to adjacent landowners in the event of a sustained crown fire. Severe mortality (near 100%) of the stand would be expected in the event of a wildfire.

**Insects and Diseases:** Within Unit 1, most (80%) of the Douglas-fir (DF) show signs of reduced vigor in the form of faded crowns and red needles. Regeneration is very low to non-existent but consists primarily of DF advanced regeneration. Douglas-fir bark beetles, defoliators such as western spruce budworm, and signs of Armillaria root-rot are apparent and stand vigor is low.

**Sensitive/Rare Plants:**

No TES or plant species of concern were identified by the MNHP or observed by field staff in the project area.

**Noxious Weeds:**

Existing noxious weeds primarily consist of spotted knapweed (*Centaurea maculosa*) and cheatgrass (*Bromus tectorum*) and are common in the Project Area as well as the greater Cramer Creek drainage. Within the project area, efforts have been made by the grazing license holders, adjacent landowners, and the DNRC to decrease noxious weed populations along the roads and this work has decreased the weed populations in recent years. However, noxious weeds are still prevalent along roads and other disturbed areas.

Vegetation	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
<b>No-Action</b>														
Current Cover/DFCs	X					X				X			N/A	1
Age Class	X					X				X			N/A	2
Old Growth	X				X				X				N/A	3
Fire/Fuels		X					X				X		N/A	4
Insects/Disease		X				X				X			N/A	5
Rare Plants	X				X				X				N/A	
Noxious Weeds		X				X				X			N/A	6
<b>Action</b>														
Current Cover/DFCs		X				X				X			Y	1
Age Class		X			X				X				Y	2
Old Growth	X				X				X				N/A	3
Fire/Fuels		X				X				X			Y	4
Insects/Disease		X				X				X			Y	5
Rare Plants	X				X				X				N/A	
Noxious Weeds		X				X				X			Y	6

**Vegetation Comments:**

1) Units 1-2: Without active management (No-Action Alternative), stands within Units 1 and 2 would remain in their current cover type of later seral species and would not be expected to move toward their DFC without a natural disturbance such as wildfire. Silvicultural prescriptions of the Action Alternative were developed to emulated natural disturbance and move the stands within Units 1 and 2 toward DNRC desired future conditions.

Units 3-6: Without active management (No-Action Alternative), shade tolerant species would be expected to outcompete seral species, eventually changing the historic cover type and species distribution of the desired future conditions of the stand. Silvicultural prescriptions for the Action Alternative were developed to maintain the desired future conditions for the project area.

2) Unit 1: Without active management (No-Action Alternative), stands within Unit 1 would continue to have high mortality among mature Douglas-fir, the oldest age class, from insect and disease damage induced by low vigor and competition as well as wind throw of stems with Armillaria root-rot. The loss of the older age class DF would drive the stand toward a younger age-class stand. Silvicultural prescriptions of the Action Alternative were developed to remove the DF susceptible to or currently dying. It would be expected that stands within Unit 1, under the Action Alternative, would produce a younger age class in the later seral species such as Douglas-fir. Proposed silvicultural prescriptions of the Action Alternative were developed to move Unit 1 toward uneven management and in the future represent all age classes.

Units 3-6: Silvicultural prescriptions for the Action Alternative would reduce the basal area by harvesting trees of all age classes. Age class distribution would not be expected to change with the No-Action Alternative or the Action alternative.



- 3) No old growth occurs within the Project Area as defined by Green et al. (1992). Portions within Unit 2, while not meeting Green et al. minimums, exhibit attributes of large diameter (>20in dbh) trees. Silvicultural prescriptions of the Action Alternative were developed to retain the large ponderosa pine (>20-in dbh) within this portion of Unit 2.
- 4) Under the No-Action Alternative, the Project Area would continue to have crown continuity and high amounts of dead and dying fuel loading. This poses a major hazard to adjacent landowners in the event of a sustained crown fire. The proposed Action Alternative would reduce crown continuity and would be expected to reduce the severity of a wildfire. However, fine fuels from harvesting and pre-commercial thinning would be expected to increase the rate of surface fire spread for a few years after harvesting. The increase of fine fuel loading would be short in duration (1-3 years after the proposed project implementation of each project). Forest floor plants such as forbs and grasses would also likely experience more growth contributing to the fine fuel load.
- 5) Without active management (No-Action Alternative) insect and disease mortality would continue to cause mortality within the Project area. Silvicultural prescriptions of the Action alternative were developed to salvage infested trees as well as increase health and vigor of the residual stand by reducing tree competition, thus increasing the remaining trees' resiliency to bark beetles and pathogens.
- 6) Past disturbances and periodic grazing have transported and spread noxious weeds along many roads and trails within the Project Area. Under the No-Action Alternative noxious weed management would continue to be conducted by the grazing lessee, adjacent landowners, and the DNRC based on priorities and funding available. The Action Alternative would continue to implement herbicide application (weed spraying) in the Project Area to reduce the spread of weeds along roads. However, noxious weeds would continue to occur and are likely to increase on state and adjacent lands, spread by wind, animals, equipment operation, and fire disturbance. Project areas would be monitored for noxious weeds after implementation and herbicide would be applied using an Integrated Weed Management (IWM) approach. Implementation of IWM measures listed in the mitigations would reduce existing weeds, moderate the possible spread of weeds, and improve current conditions to promote existing native vegetation.

***Vegetation Mitigations:***

- 1) Silvicultural prescriptions of the Action Alternative were developed to emulate natural disturbance and move the stands within Units 1 and 2 toward DNRC desired future conditions.
- 2) Proposed silvicultural prescriptions of the Action Alternative were developed to move Unit 1 toward uneven management and in the future represent all age classes.
- 4) The proposed Action Alternative prescriptions would reduce crown continuity and would be expected to reduce the severity of a wildfire. However, fine fuels from harvesting and pre-commercial thinning would be expected to increase the rate of surface fire spread for a few years after harvesting. The increase of fine fuel loading would be short in duration (1-3 years after the proposed project implementation of each project). Forest floor plants

such as forbs and grasses would also likely experience more growth contributing to the fine fuel load.

- 6) Project areas would be monitored for noxious weeds after implementation and herbicide would be applied using an Integrated Weed Management (IWM) approach. Implementation of IWM measures listed in the mitigations would reduce existing weeds, moderate the possible spread of weeds, and improve current conditions to promote existing native vegetation. Equipment would be washed and inspected prior to harvest operations. An application of herbicide would be applied along haul roads post-harvest of the proposed timber sale.

## **SOIL DISTURBANCE AND PRODUCTIVITY:**

### **Soil Disturbance and Productivity Existing Conditions:**

The project is located in the southern foothills of the Garnet Range north of Interstate 90 and east of Cramer Creek. Proposed harvest areas are located mainly on north and east facing hillslopes with slopes ranging from mild (<5%) to steep (>50%). Underlying geology is sedimentary rock (argillite, quartzite, and siltite) tipping to the east in Section 36 and to the south in Section 2. The sedimentary bedrock layers in the area proposed for road construction (northern half of Section 36) dip away from the hillslope. This bed orientation is more stable than beds that are parallel to a hillslope which can provide surfaces for potential slope failure. Rather, the orientation of the bed outcrops provide a buttress-like support to the hillslope.

A slope break or shelf occurs at the top of the draw located at the northern center of Section 36. It appears this may be the top of a historic rotational hillslope failure that occurred at a time that predates the existing vegetation (>50 years ago). Beyond this, no other unique or sensitive geologic features or unstable slopes have been identified within the project area. However, soils are steep and subject to rock ravel.

Soils within the proposed harvest units include Winkler gravelly loams. Topsoil is shallow and susceptible to soil displacement with increasing slopes, especially on slopes over 45%. The Winkler soils are moderately deep to shallow with common rock outcrops on ridges. Seasonal soil moisture retention will be higher on northern facing slopes.

Erosion potential is moderate and a continued process on these steep slopes. Existing roads include steep pitches, but with the durable rocky nature of soils, road surface drainage are controlled by drainage features (mainly drain-dips).

The last harvest activity in the project area was Beavertail Beetles in 2015 and 2016. Evidence of excessive soil disturbance was not observed during field review. Road BMPs are intact and functioning. These observations contribute to a conclusion that this project presents a low risk of adverse cumulative effects.

Soil Disturbance and Productivity	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
<b>No-Action</b>														
Physical Disturbance (Compaction and Displacement)	X				X				X				N/A	1
Erosion	X				X				X				N/A	1
Nutrient Cycling	X				X				X				N/A	1
Slope Stability	X				X				X				N/A	1
Soil Productivity	X				X				X				N/A	1
<b>Action</b>														
Physical Disturbance (Compaction and Displacement)			X			X				X			Y	2, 3, 4, 5, 7
Erosion		X				X				X			Y	2, 3, 5, 7
Nutrient Cycling		X				X				X			Y	5, 6, 8
Slope Stability		X			X				X				Y	7
Soil Productivity		X				X				X			Y	4, 5, 6, 8

*Comments:*

1. Implementation of the no-action alternative would result in no new soil resource impacts in the project area. Soil resource conditions would remain similar to those currently at the site.
2. Proposed harvest systems include ground-based and cable yarding. Soil and vegetation disturbance from harvest activities may result in temporary increased risk of erosion.
3. Soil disturbance and erosion risk increases with slope and slopes in project area exceed 45% in some places.
4. Direct impacts by physical disturbance would likely occur by the proposed ground-based yarding. The net observable soil impact within harvest units treated with ground-based yarding system(s) are expected to be less than 13.2% of the project area and would be minimized by use of existing roads and skid trails. Areas yarded with cable system(s) would have a lower rate of observable soil disturbance (approx. 6.2% of the area). These disturbance rate estimates are informed by previous soil disturbance monitoring of timber sales completed by the DNRC (DNRC, 2011).
5. Applicable state plans, rules, and practices have guided project planning and would be implemented during project activities, including the Montana Code Annotated (specifically Title 77, Chapter 5), the Administrative Rules of Montana (specifically Rule Chapter 36.11), the Montana Forest Best Management Practices, the DNRC Trust Lands Habitat Conservation Plan, and the State Forest Land Management Plan.
6. According to Graham et al. (1994), a minimum of 4.5 and up to 9 tons/acre of coarse woody debris (CWD) would be a desired post-harvest condition to maintain forest productivity for this forest habitat type. More than 9 tons/acre is also optimal to insure maintained nutrient balance in the area. The action alternative would include increasing or maintaining CWD concentrations per mitigation described below.

7. Unstable slopes were not observed on site. The project is anticipated to have no risk to slope stability. However, soils are steep and subject to rock ravel – caution should be used considering landowners and roads downslope of the norther portion of the project area.
8. Site preparation by prescribed burning may occur in the project area. These activities would be directed by the Forest Officer and are not anticipated to cause detrimental disturbance to project area soils. Areas with these types of slight disturbances can be quickly revegetated by tree seedlings and native vegetation (per State Forest Land Management Plan).

***Soil Mitigations:***

- BMP's would be implemented on all roads and within the units. Some lopped and scattered slash may be left in the units to mitigate erosion risks and retain nutrients on-site.
- Ground-based logging equipment (tractors, skidders, and mechanical harvesters) would be limited to slopes less than 45% unless not causing excessive disturbance.
- During project implementation the Contractor and Sale Administrator would agree to a general skidding plan prior to equipment operations. Skid trails would be monitored and mitigated as needed concurrent with harvesting and yarding operations with water bars and/or slash.
- The properties of the soils in the proposed harvest units make limiting harvest operations to dry or frozen conditions critical for preserving soil productivity. To prevent soil compaction ground-based mechanical felling and yarding would be restricted to one or more of the following conditions:
  - Soil moisture content at 4-inch depth less than 20% oven-dry weight.
  - Minimum frost depth of 4 inches.
  - Minimum snow depth of 18 inches of loose snow or 12 inches packed snow.
- A minimum of 4.5 tons/acre and ideally an average of 9 tons/acre of coarse and fine woody debris would be left on site (or return-skidded from landings) to meet the concentration for the DF/PHMA habitat type recommended by Graham et al (1994). Existing CWD on site would remain undisturbed as much as possible.
- During project implementation road construction in the northern half of Section 36: Operations would ensure large boulders and stumps are positioned so that they do not roll downslope. Operations would limit side-casting in draw bottoms or areas where material could travel >100 feet downslope.

***Soil References:***

DNRC, 2011. DNRC compiled soils monitoring report on timber harvest projects, 2006-2010, 1<sup>st</sup> Edition. Department of Natural Resources and Conservation, Forest Management Bureau, Missoula, MT.

Graham, R.T., Harvey, A.E., Jorgensen, M.F., Jain, T.B., and Page-Dumrose, D.S., 1994, Managing Course Woody Debris in Forests of the Rocky Mountains. U.S., Forest Service Research Paper INT-RP-477. Intermountain Research Station. 16p.

Lonn, J.D., McDonald, C., Sears, J.W., and Smith L.N., 2010, Geologic Map of the Missoula east 30' x 60' Quadrangle, Western Montana. Montana Bureau of Mines and Geology Open File MBMG 593.  
[https://mbmq.mtech.edu/mbmqcat/public/ListCitation.asp?pub\\_id=31350&#gsc.tab=0](https://mbmq.mtech.edu/mbmqcat/public/ListCitation.asp?pub_id=31350&#gsc.tab=0)

**WATER QUALITY AND QUANTITY:  
Water Quality and Quantity Existing Conditions:**

The project is located mainly in the Cramer Creek watershed, tributary to the Upper Clark Fork. Aquatic life, drinking water, and primary contact recreational uses of Cramer Creek are listed on the 303d list as impaired due to impacts associated with abandoned mine lands, road runoff, and direct physical alterations of the stream habitat. The causes include elevated aluminum, lead, and sediment. Stream temperature is not a listed impairment.

No streams occur within the proposed harvest areas. A Class 2 stream crossing occurs on the haul route on the private access road that flows for about 100 yards downslope of the existing culvert crossing and flows mainly in the spring and is not connected to other surface waters or the Clark Fork River.

Water Quality & Quantity	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
<b>No-Action</b>														
Water Quality	X				X				X				N/A	1
Water Quantity	X				X				X				N/A	1
<b>Action</b>														
Water Quality	X					X				X			Y	1,2
Water Quantity		X				X				X			Y	1

*Comments:*

- No foreseeable direct, indirect, or cumulative effects to water resources are anticipated with an action or no action alternative due to the distance and scale of the proposed project activities. The factors considered in making this conclusion are listed below:
  - Waterbodies are not located within the proposed harvest area.
  - Limited new road construction.
  - The proposed harvest area would affect < 3% of Cramer Creek watershed area.
- Applicable state plans, rules, and practices have guided project planning and would be implemented during project activities, including the Montana Code Annotated (specifically Title 77, Chapter 5), the Administrative Rules of Montana (specifically Rule Chapter 36.11), the Montana Forest Best Management Practices, the DNRC Trust Lands Habitat Conservation Plan, and the State Forest Land Management Plan.

*Water Quality & Quantity Mitigations:*

- Exclude harvest from RMZ of Cramer Creek located in the NW corner of Section 36 of T12N R16W.

**Water References:**

DEQ (Prepared by Hannah Riedl). 2019. Cramer Creek TMDL Implementation Evaluation. Helena, MT: Montana Dept. of Environmental Quality.  
[https://deq.mt.gov/files/Water/WQP/B/TMDL/PDF/Cramer/Cramer\\_TIE.pdf](https://deq.mt.gov/files/Water/WQP/B/TMDL/PDF/Cramer/Cramer_TIE.pdf)

## **FISHERIES:**

**Fisheries Existing Conditions:** Cramer Creek (near and downslope of the Project Area) has fish including Westslope Cutthroat Trout.

**No-Action:** No direct or indirect impacts would occur to affected fish species or affected fisheries resources beyond those described in Fisheries Existing Conditions. Cumulative effects (other related past and present factors; other future, related actions; and any impacts described in Fisheries Existing Conditions) would continue to occur.

**Action Alternative:** No foreseeable direct, indirect, or cumulative effects to fisheries resources are anticipated with an action or no action alternative due to the distance and scale of the proposed project activities. The factors considered in making this conclusion are listed below:

- Fish bearing waterbodies are not located within the project area including the proposed haul route.

No further analysis or mitigation is necessary for fisheries resources for this project because the resource is not present.

## **WILDLIFE:**

**Wildlife Existing Conditions:** The project area is a mix of forested ponderosa pine and Douglas-fir saw timber stands and younger seedling/sapling ponderosa pine and Douglas-fir stands resulting from past harvest and wildfire activity. The project area contains habitat for a diverse array of wildlife that rely on the upland coniferous forests of western Montana. Grizzly bears may use the vicinity of the project area during the non-denning period. Little or no use of the project area by wolverine would be anticipated. Portions of the project area are within the home range associated with the Beavertail Hill bald eagle territory. Potential habitat exists for flammulated owls and pileated woodpeckers in the project area. Potential fringed myotis and Townsend's big-eared bat foraging habitats may exist in the project area; some potential hoary bat roosting habitats could exist in the project area. Big game summer range as well as white-tailed deer, mule deer, elk, and moose winter ranges exists in the project area. Habitats in the project area contribute to big game security habitats in the vicinity.

**No-Action:** No potential for disturbance to wildlife would be anticipated. No timber management or associated activities would be conducted, thus no appreciable changes to existing habitats would occur. Continued maturation could improve grizzly bear and pileated woodpecker habitats, as well as big game winter and summer range attributes, but could reduce habitat quality for flammulated owls and big game forage attributes over the long term. No changes to large diameter trees or snags would occur in the project area. Generally, negligible direct, indirect, or cumulative effects to wildlife would occur.

**Action Alternative (see Wildlife table below):**

Roughly 467 acres of forested habitats, including 323 acres (66%) of existing mature Douglas-fir and ponderosa pine stands with reasonably closed canopies would be commercially harvested. In general, habitats for those species adapted to more-open stands of ponderosa pine and Douglas-fir similar to areas that historically experienced frequent, low-intensity, under burns and somewhat less frequent mixed-severity burns would increase in the project area. Conversely habitats for wildlife species that prefer somewhat dense, mature Douglas-fir and ponderosa pine

stands would be reduced. Across proposed units, reductions in canopy cover would be anticipated, but proposed prescriptions would retain numerous large trees, which could continue to provide habitats for a variety of wildlife species that rely on larger ponderosa pine and Douglas-fir. Some reductions in visual screening would occur. Prescriptions would retain at least 2 large snags and 2 large recruitment trees per acre (both >21 inches dbh where they exist, otherwise next largest size class available) and where sufficient snags are not available additional large leave trees would be retained to meet this requirement. Additionally, portions of unit 2 would be guided towards old stand status that would have a higher residual component of large trees (>21 inches dbh; see vegetation section for additional details). Proposed pre-commercial thinning could reduce some horizontal cover; proposed prescribed burning would further reduce horizontal cover, coarse woody debris, and possibly snags while also creating potential new snags from reserved live trees. As a site-preparation method, prescribed burning should increase horizontal cover in the near term with anticipated tree and shrub development. Short-term increases in disturbance potential associated with proposed road construction and use, timber management, site preparation, and pre-commercial thinning, but overall, a negligible increase in potential human disturbance would be anticipated following proposed treatments. No changes in legal motorized public access would occur in the project area. Contract stipulations would minimize the presence of human-related attractants for the duration of the proposed activities.

Wildlife	Effects								Can Impact be Mitigated?	Comment Number	
	Direct and Indirect				Cumulative						
	No	Low	Mod	High	No	Low	Mod	High			
<b>Threatened and Endangered Species</b>											
<b>Grizzly bear</b> ( <i>Ursus arctos</i> ) Habitat: Recovery areas, security from human activity		X				X				Y	1
<b>Canada lynx</b> ( <i>Felix lynx</i> ) Habitat: Subalpine fir habitat types, dense sapling, old forest, deep snow zone	X				X						2
<b>Yellow-Billed Cuckoo</b> ( <i>Coccyzus americanus</i> ) Habitat: Deciduous forest stands of 25 acres or more with dense understories and in Montana these areas are generally found in large river bottoms	X				X						2

Wildlife	Effects								Can Impact be Mitigated?	Comment Number
	Direct and Indirect				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High		
<b>Wolverine</b> <i>(Gulo gulo)</i> Habitat: Alpine tundra and high-elevation boreal forests that maintain deep persistent snow into late spring		X				X				3
<b>Sensitive Species</b>										
<b>Bald eagle</b> <i>(Haliaeetus leucocephalus)</i> Habitat: Late-successional forest less than 1 mile from open water	X				X					4
<b>Black-backed woodpecker</b> <i>(Picoides arcticus)</i> Habitat: Mature to old burned or beetle-infested forest	X				X					2
<b>Common loon</b> <i>(Gavia immer)</i> Habitat: Cold mountain lakes, nest in emergent vegetation	X				X					2
<b>Fisher</b> <i>(Martes pennanti)</i> Habitat: Dense mature to old forest less than 6,000 feet in elevation and riparian	X				X					2
<b>Flammulated owl</b> <i>(Otus flammeolus)</i> Habitat: Late-successional ponderosa pine and Douglas-fir forest		X				X			Y	5
<b>Fringed myotis</b> <i>(Myotis thysanodes)</i> Habitat: low elevation ponderosa pine,		X				X			Y	6



Wildlife	Effects								Can Impact be Mitigated?	Comment Number
	Direct and Indirect				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High		
Douglas-fir and riparian forest with diverse roost sites including outcrops, caves, mines										
<b>Hoary bat</b> ( <i>Lasiurus cinereus</i> ) Habitat: coniferous and deciduous forests and roost on foliage in trees, under bark, in snags, bridges		X				X			Y	7
<b>Peregrine falcon</b> ( <i>Falco peregrinus</i> ) Habitat: Cliff features near open foraging areas and/or wetlands	X				X					2
<b>Pileated woodpecker</b> ( <i>Dryocopus pileatus</i> ) Habitat: Late-successional ponderosa pine and larch-fir forest			X			X			Y	8
<b>Townsend's big-eared bat</b> ( <i>Plecotus townsendii</i> ) Habitat: Caves, caverns, old mines	X				X					9
<b>Big Game Species</b>										
<b>Elk</b>		X				X			Y	10,11
<b>Whitetail deer</b>		X				X			Y	10,11
<b>Mule Deer</b>		X				X			Y	10,11
<b>Moose</b>		X				X			Y	10,11
<b>Bighorn Sheep</b>	X				X					2

**Comments:**

- 1) The project area is 12 miles south of the Northern Continental Divide Ecosystem grizzly bear recovery area, and 22 miles southwest of 'occupied' grizzly bear habitat as mapped by grizzly bear researchers and managers to address increased sightings and encounters of grizzly bears in habitats outside of recovery zones (Wittinger et al. 2002). Individual animals could use the project area throughout the non-denning period; FWP data indicates the area is used by grizzly bears and that forested areas in the vicinity

offer bedding and hiding cover. Approximately 496 acres (52%) of the project area appear to have sufficient cover to potentially serve as hiding cover for grizzly bears. The project area contains no open roads, but existing open habitats as well as proximity to numerous forms of human disturbance likely reduces overall usefulness of the project area for grizzly bears.

Grizzly bears could be affected directly through increased road traffic, noise, and human activity, and indirectly by altering the amount of hiding cover and forage resources in the project area. Proposed activities could occur during the denning period or the non-denning period. Proposed activities conducted in the denning period would not be expected to disturb grizzly bears; some disturbance to grizzly bears would be possible with proposed activities that may occur during the non-denning period. Overall, the proposed activities would occur in areas where grizzly bear use would be anticipated, thus potential for disturbance and displacement of grizzly bears would be anticipated.

Approximately 1.4 mile of new permanent road and 0.3 miles of temporary roads would be constructed with the proposed activities. No changes in open road density or motorized public access would be anticipated. Negligible changes to non-motorized public access could occur, thus no appreciable changes in contact between humans and grizzly bears would occur. Hiding cover would be reduced on most of the 415 acres (84%) of hiding cover proposed to receive treatments, some potential hiding cover could persist depending on the density of trees retained, especially in the 11 acres proposed for commercial thinning. Meanwhile, proposed activities in habitats that are not presently providing hiding cover (98 acres) would slow the development of those attributes into the future. Some hiding cover in the form of brush, shrubs, and sub-merchantable trees would persist in several of the units, albeit at a reduced level from the existing condition; additional reductions in grizzly bear hiding cover would occur with the proposed pre-commercial thinning and prescribed burning. Proposed prescribed burning could increase forage resources in the near-term as trees, shrubs, and grasses regenerate following proposed activities. Overall, hiding cover would increase through time across all proposed units as young trees and shrubs regenerate over the next 5 to 10 years. Generally, reductions in hiding cover would occur on the edge of the area contributing to the larger blocks of potential security habitats in the vicinity. Although hiding cover would be reduced on roughly 373 acres that are distant enough from the existing open roads, minor reductions to security habitat would occur given the small area that would be altered, the location of those changes, and the lack of changes in open roads in the project area. Any unnatural bear foods or attractants (such as garbage) would be kept in a bear resistant manner. Any added risk to grizzly bears associated with unnatural bear foods or attractants would be minimal. Continued use of the project area and cumulative effects analysis area by grizzly bears would be anticipated at levels similar to present.

- 2) The project area is either out of the range of the normal distribution for this species or suitable habitat is not present. Thus, no direct, indirect, or cumulative effects would be anticipated.
- 3) Generally wolverines are found in sparsely inhabited remote areas near treeline characterized by cool to cold temperatures year-round and rather deep and persistent snow well into the spring (Copeland et al. 2010). The availability and distribution of food is likely the primary factor in the large home range sizes of wolverines (Banci 1994). The project area is generally below the elevations where wolverines tend to be located. No areas of potentially deep persistent spring snow occur in the vicinity. Individual animals could occasionally use lands in the project area while dispersing or possibly foraging,

and they could be displaced by project-related disturbance if they are in the area during proposed activities. However, given their large home range sizes (~150 sq. mi. -- Hornocker and Hash 1981) and the manner in which they use a broad range of forested and non-forested habitats, the proposed activities and alterations of forest vegetation on the project area would have negligible influence on wolverines.

- 4) Portions of the project area are within the home range associated with the Beavertail Hill bald eagle territory. This territory experiences considerable levels of human disturbance associated with Highway 90, the Montana Rail Link railroad, human residences, agricultural operations, timber management, and various forms of summer and winter recreation. Proposed activities could occur during the nesting season (February 1-August 15), or the non-nesting (August 16-February 1) season. Negligible disturbance to bald eagles could occur for any activities that could be conducted during the nesting period. Conversely, no disturbance to bald eagles would be anticipated should those activities be conducted during the non-nesting period. Minor reductions in the availability of large snags or emergent trees in the project area that could be used as nest or perch trees in the home range could occur; any reductions would only occur in a small portion of the home range, which would be additive to past and ongoing activities within the home range. No changes to human access to the home range would occur, thereby limiting potential for introducing additional human disturbance to the territory. No appreciable changes to bald eagle habitats would be anticipated from the proposed pre-commercial thinning or prescribed burning.
- 5) Roughly 869 acres (91% of the project area) of potential flammulated owl habitats exist in the project area in dry ponderosa pine and Douglas-fir stands. There are an additional 639 acres of potential flammulated owl habitats on stands dominated by dry Douglas-fir and ponderosa pine on DNRC-managed lands within the cumulative effects analysis area. Some suitable habitats likely exist on a portion of the 4,041 acres (44% of non-DNRC-managed lands) of open and closed forested habitats on other ownerships in the cumulative effects analysis area; however, portions of these forested areas are not likely preferred flammulated owl habitat types. Elsewhere in the cumulative effects analysis area, some of the forested habitats have been harvested in the recent past, potentially improving flammulated owl habitat by creating foraging areas and reversing a portion of the Douglas-fir encroachment and opening up stands of ponderosa pine; however, retention of large ponderosa pine and/or Douglas-fir was not necessarily a consideration in some of these harvest units, thereby minimizing the benefits to flammulated owls.

Flammulated owls can be tolerant of human disturbance (McCallum 1994), however the elevated disturbance levels associated with proposed activities could negatively affect flammulated owls should activities occur when flammulated owls are present. Proposed activities could overlap the nestling and fledgling periods, which has the potential to disturb nesting flammulated owls. Since some snags and large trees would be retained, loss of nest trees would be expected to be minimal. Proposed activities on 457 acres of potential flammulated owl habitats (53% of the habitats in the project area) would open the canopy while favoring ponderosa pine, western larch, and Douglas-fir. The proposed treatments would reduce canopy closure and improve foraging habitats. Negligible changes to flammulated owl foraging habitats would be anticipated with the proposed pre-commercial thinning. Prescribed burning could further reduce foraging habitats, but the anticipated regeneration in those units could improve foraging habitats more quickly than if left to natural regeneration; some nesting substrates could be lost but additional snags could be recruited from proposed prescribed burning. The more open stand

conditions, the retention of fire adapted tree species, and the maintenance of existing snags would move the project area toward historical conditions, which is preferred flammulated owl habitat. Disturbance in flammulated owl habitats would occur on a small portion of the cumulative effects analysis area and could be additive to ongoing activities in the area. Proposed activities would increase the amount of the cumulative effects analysis area that has been recently harvested, which would add to the amounts of foraging habitats available, but possibly at the expense of losing snags and large trees important for nesting. Overall, no change in the amount of potential flammulated owl habitats would occur on DNRC-managed lands or any other ownerships; a slight improvement in habitat quality at the cumulative-effects analysis level could be realized with this alternative and the more historic conditions likely after proposed activities.

- 6) Fringed Myotis are year-round residents of Montana that use a variety of habitats, including deserts, shrublands, sagebrush-grasslands, and forested habitats. They overwinter in caves, mines, crevices, or human structures. Fringed myotis forage near the ground or near vegetation. No known caves, mines, crevices, or other structures used for roosting occur in the project area or immediate vicinity. Fringed myotis have not been documented in the vicinity of the project area, but since suitable habitat exists, some use by fringed myotis is possible. Proposed activities could disturb fringed myotis should they be in the area during proposed activities. Changes in vegetation structural attributes could change overall prey availability, but considerable foraging habitats would persist in the project and cumulative effects analysis areas. Overall, negligible changes to fringed myotis use of the project area or cumulative effects analysis areas would be anticipated.
- 7) Hoary bats are summer residents (June-September) across a variety of forested habitats in Montana. Hoary bats frequently forage over water sources near forested habitats. Hoary bats are generally thought to roost alone, primarily in trees, but will also use caves, other nests, and human structures. Some use of the project area by Hoary bats would be possible given the varied habitats present and the proximity to the Clark Fork River, Cramer Creek, Beavertail Pond, and numerous other smaller riparian areas. Individual trees and snags in the existing forested habitats could be used for roosting. No known caves or other structures used for roosting occur in the project area or immediate vicinity. Hoary bats have been documented in the vicinity of the project area along Cramer Creek. Proposed activities could disturb hoary bats should they be in the area during proposed activities, but disturbance generally outside of the summer months would not be expected to disturb hoary bats. Loss of potential roosting habitats could occur, but considerable amounts of trees would persist in the project and cumulative effects analysis areas. No changes in foraging habitats would be anticipated. Overall, negligible changes to hoary bat use of the project area or cumulative effects analysis areas would be anticipated.
- 8) Roughly 329 acres (35% of the project area) of pileated woodpecker nesting habitat exist in the project area; another 160 acres (17%) of potential foraging habitats exist in the project area. In the cumulative effects analysis area, roughly 131 acres (18%) of additional pileated woodpecker habitats exist on DNRC-managed lands dominated by Douglas-fir and Douglas-fir/western larch. There are roughly 39 acres (5%) of additional potential feeding habitats on DNRC managed lands within the cumulative effects analysis area. Some suitable habitats likely exist on a portion of the 1,618 acres of forested habitats on other ownerships in the cumulative effects analysis area (18% of non-DNRC lands). Much of the 7,528 acres (82%) of shrubs, herbaceous areas, poorly

stocked forested stands, and recently harvested stands on other ownerships in the cumulative effects analysis area is likely too open to be useful to pileated woodpeckers.

Pileated woodpeckers can be tolerant of human activities (Bull and Jackson 1995), but might be temporarily displaced by any proposed activities that could occur during the nesting period. Roughly 288 acres (88%) of the potential nesting habitat along with 120 acres (75%) of potential foraging habitats would be harvested. Most of these stands proposed for treatment would be temporarily unsuitable for pileated woodpeckers due to the openness of the stands following proposed treatments, but some use could occur depending on the density of trees retained. Overall quality of these potential pileated woodpecker habitats would be reduced for 20-40 years. Elements of the forest structure important for nesting pileated woodpeckers, including snags, coarse woody debris, numerous leave trees, and snag recruits would be retained in the proposed harvest areas. Proposed pre-commercial thinning would not affect current pileated woodpecker habitats, but could expedite the movement of those stands towards future pileated woodpecker habitats. Proposed prescribed burning could also shorten the time before those areas are again suitable for pileated woodpeckers; prescribed burning could reduce some nesting substrates but additional snags could also be recruited. Since pileated woodpecker density is positively correlated with the amount of dead and/or dying wood in a stand (McClelland 1979), pileated woodpecker densities in the project area would be expected to be reduced on 467 acres proposed for commercial treatment. In the cumulative effects analysis area, the reduction in quality on 288 acres of potential nesting habitats and 120 acres of foraging habitats would further reduce available habitats and reduce the overall quality of the cumulative effects analysis area for pileated woodpeckers. Overall, a reduction in the quality of pileated woodpecker habitats in the cumulative effects analysis area would be anticipated, but continued use would be expected.

- 9) Townsend's big eared bats are year-round residents in Montana that is closely associated with caves, caverns, old mines. Townsend's big-eared bats feed on various nocturnal flying insects near the foliage of trees and shrubs. Townsend's big-eared bats have been documented in the vicinity of the Cramer Creek to the north of the project area. Some use of the project area by Townsend's big-eared bats would be possible given the varied habitats. Trees and shrubs in the project area could be used for foraging. No known caves, caverns, or other structures potentially used for roosting are known to occur in the project area or immediate vicinity. Proposed activities could disturb Townsend's big-eared bats should they be in the area during proposed activities. Loss of potential foraging habitats could occur, but considerable amounts of trees would persist in the project and cumulative effects analysis areas. No changes in roosting habitats would be anticipated. Overall, negligible changes to Townsend's big-eared bats use of the project area or cumulative effects analysis areas would be anticipated.
- 10) White-tailed deer (46 acres, 5%), mule deer (599 acres, 63%), elk (351 acres, 37%), and moose (8 acres, <1%) winter ranges exist in the project area. Approximately 490 acres of the project area (51%) appear to have sufficient canopy closure to be providing snow intercept and thermal cover attributes for big game. Evidence of non-winter use by deer and elk was noted during field visits. Within the cumulative-effects analysis area, big game species are fairly common and winter range for deer and elk are fairly widespread in the lower elevation areas along the Clark Fork River. Roughly 10,411 acres (23%) of white-tailed deer, 12,263 acres (28%) of mule deer, 12,776 acres (29%) of elk, and 4,572 (10%) of moose winter ranges exist in the cumulative effects analysis area. There

are roughly 8,639 acres (59%) of stands dominated by Douglas-fir, Douglas-fir/western larch, and ponderosa pine on DNRC-managed lands in the cumulative effects analysis area that appear to be providing snow intercept and thermal cover attributes for big game; approximately 9,733 acres (50%) of forested habitats on other ownerships in the cumulative effects analysis area appear to have sufficient canopy closure to provide thermal cover and snow intercept for big game, however portions of these habitats may be too high in elevation to be suitable for winter thermal cover. Human disturbance within the winter range is associated with residential development, agricultural activities, recreational snowmobile use, commercial timber management, several roadways, including Highway 90, and Montana Rail Link railroad.

Proposed activities could occur during the winter or non-winter periods. Some potential for disturbance to wintering big game could occur with any activities that may occur during the winter period. Proposed activities conducted during the non-winter period would not disturb wintering big game but could disturb big game species using the project area during the non-winter period, however given the time of the year, the general use patterns, and the availability of other habitats in the vicinity, the potential effect to big game would be minor. Proposed activities would occur on roughly 343 acres (57%) of mule deer winter range and 123 acres (35%) of elk winter range, but would avoid the areas of white-tailed deer and moose winter range in the project area; proposed activities would reduce canopy closure and potential winter use by big game on roughly 408 acres (83%) that likely have attributes facilitating considerable winter use by big game. Nearly 40% of these stands where thermal cover and snow intercept would be reduced occur on northerly aspects and most stands containing thermal cover reductions are near the ridge tops where big game are less likely to be found during severe winter conditions. Following proposed activities, canopy densities in these stands providing snow intercept and thermal cover would be reduced, reducing habitat quality for wintering big game. Pockets of cover would persist in the project area that likely would provide thermal cover and snow intercept capacity for big game as well as opportunities to move through the area in areas of reduced snow loads. Within the proposed units, increases in forage production could benefit big game in the short-term. In general, it could take 30 to 50 years for the stands in the proposed units to regenerate and attain a size capable of providing thermal cover for big game. Proposed pre-commercial thinning would not appreciably alter winter range attributes but could shorten the time before some of these stands provide these attributes to big game in the future. Similarly, proposed prescribed burning could reduce some near-term foraging resources, but it could also stimulate forage production and shorten the time for some of those areas to again be large enough to function as thermal cover. Potential disturbance to wintering big game would be additive in the cumulative effects analysis area to other forms of disturbance, including timber management, numerous open roads, and a variety of human developments and human recreation. Further reductions in thermal cover and snow intercept would be additive to losses from recent timber management, residential land clearing, and other disturbances in the cumulative effects analysis area. Continued use of the larger winter ranges would be anticipated at levels similar to present levels following proposed treatments.

- 11) The project area is adjacent to a large piece of The Nature Conservancy lands that are enrolled in the Block Management Program, which facilitates non-motorized public access for the purpose of recreational hunting. There are numerous access points to the BMA, including some in the vicinity of the project area. Hiding cover (496 acres; 52%) is somewhat limited in portions of the project area due to past timber management, grazing

activity, wildfires, as well as the natural openness of some of the habitats in the project area; similarly hiding cover is moderate in the cumulative effects analysis area, with many of these same limiting factors influencing big game hiding cover. There are no open roads in the project area. Some non-motorized access to the project area exists given the proximity to open roads, the 9.2 miles of restricted roads (6.2 mi./sq. mi., simple linear calculation) in the project area, and the proximity to lands enrolled in the Block Management Program. A portion of the project area does not contain big game security habitats due to the proximity to open roads, however roughly 506 acres (56% of the project area) are distant enough from open roads to contribute to a larger block of potential security habitats. Portions of this block were affected by the Ryan Gulch fire in 2000, which removed some of the cover in the project area. In the cumulative effects analysis area, access for recreational hunting is relatively high, with many open roads that facilitate access and numerous restricted roads that could be used for non-motorized use. Within the cumulative effects analysis area, at least 4 patches (minimum of 9,719 acres; 22%) of potential security habitat exist. Two of these patches extend beyond the cumulative effects analysis area and contribute to larger blocks of potential security habitats; the potential areas of security habitats in the project area contribute to one of these areas that extend beyond the boundaries of the cumulative effects analysis area. However most of this block was altered by the Ryan Gulch fire in 2000, which removed considerable amounts of cover reducing overall effectiveness of these habitats, but some cover has recovered and the block is generally rugged, which compensates for some of the past reductions in cover.

Tree density within proposed units would be reduced on approximately 467 acres, including roughly 221 acres (44%) of forested stands in the project area contributing to potential big game security habitats. Overall hiding cover would be reduced within the proposed units but could improve as trees and shrubs become reestablished in the openings over the next 10-20 years. The retention of structure within proposed units and unharvested areas between the various units, including riparian habitats would reduce the potential effects of the hiding cover reductions. Some increases in sight distance in the project area would be anticipated; these increases in sight distances could increase big game vulnerability to hunting mortality as hunters would be able to detect big game at longer distances in proposed units. Increases in forage production in proposed units could benefit big game in the short-term. No changes in open roads or motorized access for the general public would occur. During all phases of the project, any roads opened with project activities would be restricted to the public and closed after the completion of project activities. Minor increases in non-motorized access would occur with the proposed construction of 1.4 miles of new permanent road and 0.3 miles of temporary roads. Numerous contract stipulations would minimize the effect on the existing big game security habitat by prohibiting contractors from carrying firearms while conducting contract operations and prohibiting contractors from accessing restricted areas for other purposes, such as hunting. Proposed pre-commercial thinning could further reduce hiding cover quality for big game, but cover would be expected to persist in proposed pre-commercial thinning units and in un-treated portions of the project area. In units proposed for prescribed burning following proposed harvesting, cover would be removed and sight distances increased, but the effects would be short-lived as the anticipated regeneration within those areas would be expected to start developing those attributes in the near-term. Collectively, the alterations of cover could reduce the quality of big game security habitat in a small portion of the cumulative effects analysis area and would be additive to past reductions in the cumulative effects analysis area. No changes in public, motorized access or non-motorized access would be expected, which would not affect

big game vulnerability in the cumulative effects analysis area. Hiding cover on a small amount (221 acres) of potential big game security habitats would be altered. Overall minor effects to big game security habitats would be expected given the small amount of area that would be altered, the location of those changes, the lack of changes in open roads in the project area, and the levels of use by big game in the vicinity; big game security habitats would persist in the cumulative effects. Negligible effects to big game survival would be anticipated.

**Wildlife Mitigations:**

- A DNRC biologist would be consulted if a threatened or endangered species is encountered to determine if additional mitigations that are consistent with the administrative rules for managing threatened and endangered species (ARM 36.11.428 through 36.11.435) are needed.
- Motorized public access would be restricted at all times on restricted roads that are opened for harvesting activities; signs would be used during active periods and a physical closure (gate, barriers, equipment, etc.) would be used during inactive periods (nights, weekends, etc.). These roads and skid trails would be reclosed to reduce the potential for unauthorized motor vehicle use.
- Snags, snag recruits, and coarse woody debris would be managed according to ARM 36.11.411 through 36.11.414, particularly favoring western larch and ponderosa pine. Clumps of existing snags could be maintained where they exist to offset areas without sufficient snags. Coarse woody debris retention would emphasize retention of downed logs of 15-inch diameter or larger.
- Contractors and purchasers conducting contract operations would be prohibited from carrying firearms while on duty.
- Food, garbage, and other attractants would be stored in a bear-resistant manner.
- Should a raptor nest be identified in or near project activities, activities would cease and a DNRC biologist would be contacted. Site-specific measures would be developed and implemented to protect the nest and birds prior to re-starting activities.
- Provide connectivity by maintaining corridors of unharvested and/or lighter harvested areas along riparian areas, ridge tops, and saddles.

**AIR QUALITY:**

Air Quality	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
<b>No-Action</b>														
Smoke	X				X				X				N/A	
Dust	X				X				X				N/A	
<b>Action</b>														
Smoke		X				X			X				Y	1



Air Quality	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
Dust		X				X			X				Y	2

**Air Quality Comments**

- 1) Under the Action Alternative, slash piles consisting of tree limbs and tops and other vegetative debris would be created throughout the Project Area during timber harvesting. These slash piles would be burned after harvesting operations have been completed. Following harvesting operations prescribed fire may be used to prep soils for seral species planting.
- 2) Dust could be created during hauling activities; however, the Action Alternative would have a low risk of direct, indirect, and cumulative effects on air quality by implementing the listed air quality mitigations.

**Air Quality Mitigations:**

- 1) Burning within the Project Area would be short in duration and would be conducted when conditions favor good to excellent ventilation and smoke dispersion as determined by the Montana Department of Environmental Quality and the Montana/Idaho Airshed Group. The DNRC, as a member of the Montana/Idaho Airshed Group, would only burn on approved days.
- 2) Dust abatement would be applied as needed during hauling operations if excessive dust is created.

**ARCHAEOLOGICAL SITES / AESTHETICS / DEMANDS ON ENVIRONMENTAL RESOURCES:**

Will Alternative result in potential impacts to:	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
<b>No-Action</b>														
Historical or Archaeological Sites	X				X				X				N/A	
Aesthetics		X				X			X				N/A	2
Demands on Environmental Resources of Land, Water, or Energy	X				X				X					
<b>Action</b>														
Historical or Archaeological Sites	X				X				X				N/A	1
Aesthetics		X				X			X				Y	2
Demands on Environmental Resources of Land, Water, or Energy	X				X				X					

**Comments:**

- 1) Scoping letters were sent to those Tribes that requested to be notified of DNRC timber sales. No response was returned that identified a specific cultural resource issue. A Class I (literature review) level review was conducted by the DNRC staff archaeologist for the area of potential effect (APE). This entailed inspection of project maps, DNRC's sites/site leads database, land use records, General Land Office Survey Plats, and control cards. The Class I search results revealed that no cultural or paleontological resources have been identified in the APE, and portions of the APE have been inventoried to Class III standards. Because the topographic setting and geology suggest a low to moderate likelihood of the presence of cultural or palaeontologic resources, proposed timber harvest activities are expected to have No Effect to Antiquities. No additional archaeological investigative work will be conducted in response to this proposed development. However, if previously unknown cultural or paleontological materials are identified during project related activities, all work will cease until a professional assessment of such resources can be made.
  
- 2) The Beetlejuice Project Area is visible from the I-90 corridor as well as Cramer Creek Road. The most significant visual change would be expected within the proposed Unit 1 from Cramer Creek Road and a few scattered residences located in the bottom, near Cramer Creek. All other proposed harvest units would be moderate in intensity. The Project area is surrounded by former large industrial private ownership. Past forest management has produced areas of young single-aged stands as well as younger class uneven-aged stands. In addition to past management, the stand-replacing Ryan Gulch fire of 2000 has initiated young single-aged stands within and adjacent to the Project Area. Tree regeneration and growth from past management and fire (within the Project Area and adjacent ownership) has moderated within the last 20 years. However, the younger appearance of some of the adjacent stands still contrasts with the size and composition of the current Project Area. Implementation of the Action Alternative would result in a visible harvest entry, visible new road construction, as well as visible implementation of the proposed prescribed fire site preparation. Visual changes within the Project Area would be expected to be similar in residual tree density and road density to the surrounding ownerships adjacent to the Project Area.

**Historical or Archaeological Sites Mitigations:**

- 1) If previously unknown cultural or paleontological materials are identified during project related activities, all work will cease until a professional assessment of such resources can be made.

**Aesthetics Mitigations:**

- 2) Silvicultural treatments would attempt to emulate natural disturbances, early seral species which are more fire-resistant would be preferred for leave trees (PP and WL). Leave trees would be selected based on species form, and vigor; leaving a more natural appearance, which would decrease contrast in form, line, color, and texture between past and current management activities and ownerships. Regeneration would be monitored post-harvest, and the Project Area would be planted as needed. As regeneration grows in height and volume, it would be expected that regeneration would fill visual openings and decrease the visual lines by between ownerships. Newly

constructed roads would be grass seeded within the first growing season following the proposed construction. It would be expected that the grass seed would moderate the visual impacts of the road construction, especially on cut and fill slopes. Prescribed fire prescriptions would include objectives to protect the residual overstory trees left during the proposed harvest activities.

**OTHER ENVIRONMENTAL DOCUMENTS PERTINENT TO THE AREA:** *List other studies, plans or projects on this tract. Determine cumulative impacts likely to occur as a result of current private, state or federal actions in the analysis area, and from future proposed state actions in the analysis area that are under MEPA review (scoped) or permitting review by any state agency.*

- Beavertail Beetles Timber Sale Environmental Assessment Checklist DNRC, July 2015

## Impacts on the Human Population

Evaluation of the impacts on the Proposed Action including direct, secondary, and cumulative impacts on the Human Population.

Will Alternative result in potential impacts to:	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
<b>No-Action</b>														
Health and Human Safety	X				X				X				N/A	
Industrial, Commercial and Agricultural Activities and Production	X				X				X				N/A	
Quantity and Distribution of Employment	X				X				X				N/A	
Local Tax Base and Tax Revenues	X				X				X				N/A	
Demand for Government Services	X				X				X				N/A	
Access To and Quality of Recreational and Wilderness Activities	X				X				X				N/A	
Density and Distribution of population and housing	X				X				X				N/A	
Social Structures and Mores	X				X				X				N/A	
Cultural Uniqueness and Diversity	X				X				X				N/A	
<b>Action</b>														
Health and Human Safety	X				X				X				N/A	

Will Alternative result in potential impacts to:	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
Industrial, Commercial and Agricultural Activities and Production													N/A	
Quantity and Distribution of Employment	X				X				X				N/A	
Local Tax Base and Tax Revenues	X				X				X				N/A	
Demand for Government Services	X				X				X				N/A	
Access To and Quality of Recreational and Wilderness Activities		X			X				X				Y	1
Density and Distribution of population and housing	X				X				X				N/A	
Social Structures and Mores	X				X				X				N/A	
Cultural Uniqueness and Diversity	X				X				X				N/A	1

**Comments:**

- 1) The proposed Project Area is used for hiking, hunting, and general recreating by non-motorized users with a conservation license (access to Project Area is through a locked gate on frontage road with no public motorized use). The DNRC does not track specific recreational activities (non-special recreation use license users) within the Trust Land ownership in the project area. The proposed Action Alternative would include a possible public closure during the proposed implementation of the prescribed fire site preparation. A possible public closure within the vicinity of proposed burn unit (harvest Unit 1) may be needed to ensure both public and DNRC personnel safety during the proposed implementation of the proposed prescribed fire activities. A temporary change of recreational usage during project implementation could occur but would be short in duration.

**Mitigations:**

- 1) Signs would be posted at the anticipated public entry points to inform the public of the prescribed burn. No public use restrictions would be imposed during the proposed Action Alternative activities outside of the proposed prescribed fire. Signs would be posted indicating that log truck traffic and logging operations are present within the Project Area during the proposed new road construction and harvest activities.

**Other Appropriate Social and Economic Circumstances:**

Costs, revenues and estimates of return are estimates intended for relative comparison of alternatives. They are not intended to be used as absolute estimates of return. The estimated stumpage is based on comparable sales analysis. This method compares recent sales to find a

market value for stumpage. These sales have similar species, quality, average diameter, product mix, terrain, date of sale, distance from mills, road building and logging systems, terms of sale, or anything that could affect a buyer's willingness to pay.

**No-Action Alternative:** The No-Action Alternative would not generate any return to the Common School Trust at this time.

**Action Alternative:** The proposed timber harvest would generate additional revenue for the Common School Trust. The estimated return to the trust for the proposed harvest is \$163,000 based on an estimated harvest of 3.0 million board feet (20,400 tons) and an overall stumpage value of \$8.00 per ton. Additional Forest Improvement fees of \$3.20/ton (based on a ton/MBF conversion of 6.8) would be collected for all sawlog loads. Costs, revenues, and estimates of return are estimates intended for relative comparison of alternatives, they are not intended to be used as absolute estimates of return.

The proposed pre-commercial thinning, prescribed burning site prep, and planting would initially generate cost to the Trust; however, this would be an investment in increased productivity for the stand. It would be expected this increased productivity would result in increased merchantable volume, available at a later date.

Direct costs associated with pre-commercial thinning (PCT) are estimated to be \$14,700. This figure was estimated by multiplying the estimated number of PCT acres (49) by the estimated cost of \$300/acre. This estimate is assumed from recent PCT projects contracted at SWLO (Southwestern Land Office). Direct costs associated with the proposed prescribed fire site prep are estimated to be \$30,000 using an internal RX burn cost estimating tool.

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**Does the Proposed Action involve potential risks or adverse effects that are uncertain but extremely harmful if they were to occur?**

No

**Does the Proposed Action have impacts that are individually minor, but cumulatively significant or potentially significant?**

No

**Environmental Assessment Checklist Prepared By:**

**Name: Scott Allen**  
**Title: Forest Management Supervisor**  
**Date: April 16, 2024**

**Finding**

**Alternative Selected**

Action Alternative

**Significance of Potential Impacts**

The EA adequately addressed the issues identified during project development, and displayed the information needed to make the pertinent decisions.

Evaluation of the potential impacts of the proposed timber sale indicates that significant impacts will not occur as a result of the implementation of the Action Alternative.

The ID Team provided sufficient opportunities for public review and comment during project development and analysis.

**Need for Further Environmental Analysis**

EIS

More Detailed EA

No Further Analysis

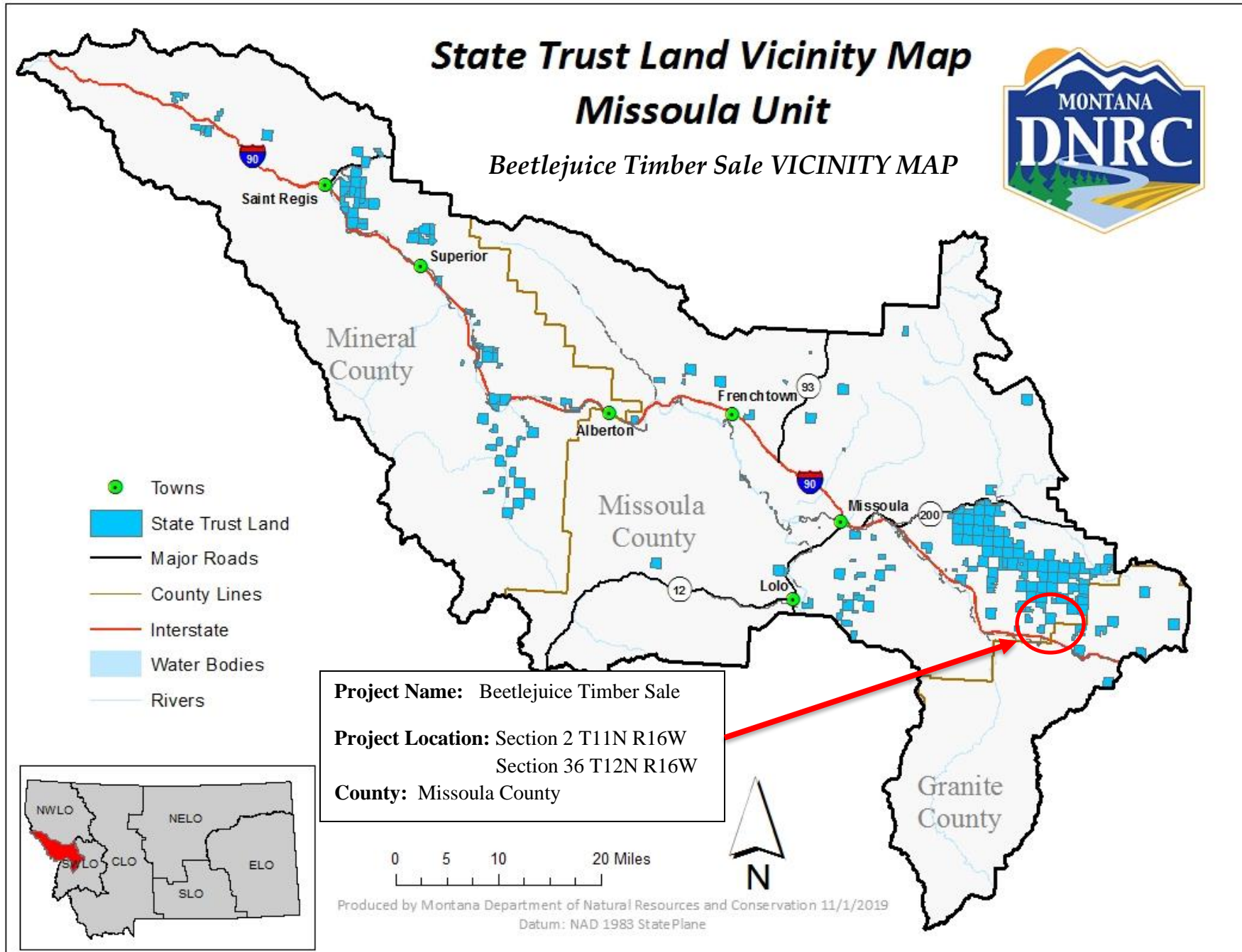
**Environmental Assessment Checklist Approved By:**

**Name: Amy Helena**  
**Title: Missoula Unit Manager**  
**Date: April 18, 2024**  
**Signature: *Isi Amy Helena***

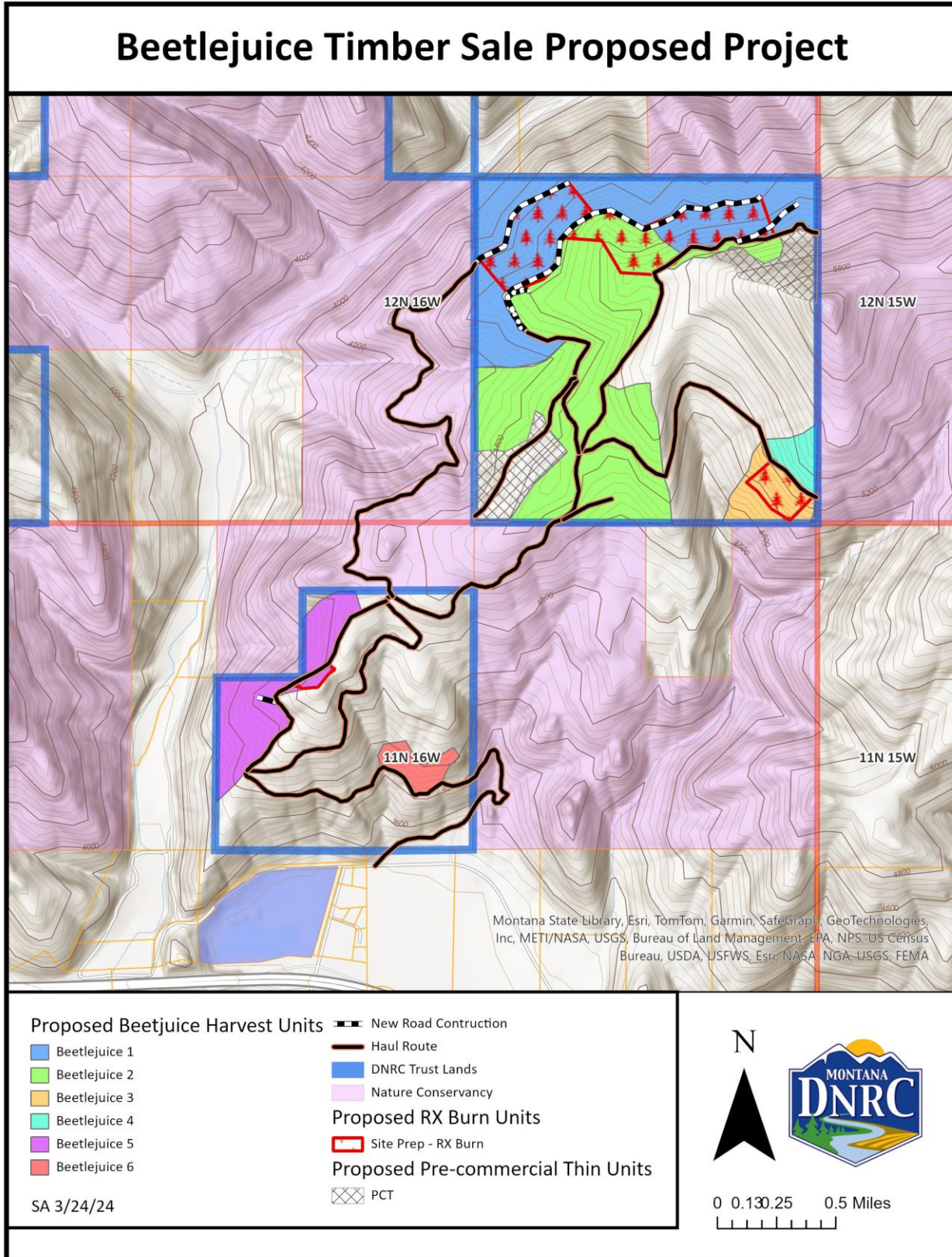


## Attachment A - Maps

A-1: Timber Sale Vicinity Map



A-2: Timber Sale Harvest Units



## **Attachment B – Silvicultural Prescriptions**



<b>SALE/PROJECT NAME:</b> Beetlejuice	<b>DATE:</b> 3/1/2024
<b>CUTTING / TREATMENT UNIT NUMBER(s):</b> Unit 1	<b>ACRES:</b> APPROXIMATELY 147 acres
<b>LOCATION (TRS):</b> Section 36 T12N R16W	<b>EST. HARVEST VOLUME:</b> 735 MBF
<b>WATERSHED:</b> Cramer Creek (Clark Fork River)	<b>ELEVATION:</b> 5200 feet
<b>HABITAT TYPE(s):</b> PSME/SYAL-CARU phase (126 acres) PSME/FIED (9 acres)	<b>ASPECT N, NW, SE</b>
<b>FIRE GROUP:</b> Group 6 (126 acres) Group 5 (9 acres)	
<b>CURRENT COVER TYPE:</b> Douglas-fir	<b>SLOPE (%):</b> 40-70%
<b>DESIRED COVER TYPE:</b> Western Larch/Douglas-fir	<b>PREPARED BY:</b> Scott Allen

STAND DESCRIPTION
<p>Stands within Unit 1 consist primarily of two differing stands delineated by an aspect break: a south-southeast facing aspect and a north-northwest facing aspect. The drier south-southeast aspect consists of an uneven-aged multistoried forest type. Large (greater than 12-inch dbh) relic ponderosa pine (PP) from previous cuts, as well as regeneration initiated during previous harvests, dominate the overstory. Large Douglas-fir (DF) are also members of the overstory. Most (80%) of the DF show signs of reduced vigor in the form of faded crowns and red needles. The mid-level canopy is a multi-age mix of 80% DF and 20% PP. Regeneration consists primarily of clumps of DF. The north-northwest facing portion of the unit consists primarily of one older class strata: DF 80%, WL 15%, and PP 5%. Large Douglas-fir (DF) are also members of the overstory. Most (80%) of the DF show signs of reduced vigor in the form of faded crowns and red needles. Regeneration is very low to non-existent but consists primarily of DF advanced regeneration. Douglas-fir defoliators and signs of rot are apparent and stand vigor is low. Knapweed is established within both stands, but primarily south aspects or flat benches. Some cheatgrass was observed within the unit</p>

TREATMENT OBJECTIVES	TARGET STAND CONDITIONS
<input checked="" type="checkbox"/> Move stands toward desired future conditions <input checked="" type="checkbox"/> Emulate natural disturbance regimes <input checked="" type="checkbox"/> Promote/establish regeneration <input checked="" type="checkbox"/> Enhance stand growth and vigor <input checked="" type="checkbox"/> Address insect and disease issues <input checked="" type="checkbox"/> Reduce fuel loading/fire hazard <input checked="" type="checkbox"/> Capture value of dead/dying timber <input checked="" type="checkbox"/> Generate revenue for the trust beneficiaries <input type="checkbox"/> Other: (specify)	<p>An ITS (individual tree selection) would be used prescription to reduce overall basal area throughout the size class spectrum. Large, dominant early seral species (WL and PP) would be preferred for leave trees. All DF of inferior phenotype, regardless of size, would be favored for cut trees. Targeting DF for removal would help to move the current DF cover type toward the WL/DF future desired condition. In addition, sanitation of all inferior DF exhibiting low vigor would be expected to suppress the amount of insect and disease within the stand. Spacing within portions of the cutting unit would be more open than a traditional ITS because of the lack of early seral species or DF exhibiting good form and vigor (40-60 feet spacing). Trees exhibiting dominant traits within their respective strata; i.e. good crown ratio or other signs of vigor, would be preferred to leave in all other size classes. In areas where multiple species of similar size and phenotypical attributes exist the following species preference would be used to select leave trees: PP, WL, and DF .</p>

PRESCRIBED TREATMENT			
Even-Aged Methods	Uneven-Aged Methods	Intermediate Treatments	Salvage Treatments
<input type="checkbox"/> Clearcutting <input type="checkbox"/> Seed Tree <input type="checkbox"/> Shelterwood <input type="checkbox"/> check if with reserves	<input checked="" type="checkbox"/> Individual Tree Selection <input type="checkbox"/> Group Selection <input type="checkbox"/> Old Growth Maintenance <input type="checkbox"/> Old Growth Restoration	<input type="checkbox"/> Overstory Removal <input type="checkbox"/> Commercial Thinning <input type="checkbox"/> Sanitation <input type="checkbox"/> Precommercial Thinning	<input type="checkbox"/> Fire Salvage <input type="checkbox"/> Insect / Disease Salvage <input type="checkbox"/> Weather/Blowdown Salvage <input type="checkbox"/> Other Salvage

HARVEST IMPLEMENTATION GUIDELINES	
Marking System:	<input type="checkbox"/> Cut Tree <input type="checkbox"/> Leave Tree <input checked="" type="checkbox"/> Sample Mark / Designate x Description <input checked="" type="checkbox"/> Species Designation
Number/Spacing/Size of Leave Trees:	See target stand description

Species Preference:	PP, WL, DF
Characteristics of cut or leave trees:	Phenotypic superior trees
Number of Snags/Snag Recruits:	Greater than 2 snags where available and 2 recruits
Additional Information:	Cut by prescription

HARVEST METHOD					
Yarding:	<input type="checkbox"/> Tractor	<input checked="" type="checkbox"/> Skyline	<input type="checkbox"/> Combination	<input checked="" type="checkbox"/> Excaline	<input type="checkbox"/> Other: (specify)
Ground conditions:	<input checked="" type="checkbox"/> Dry	<input checked="" type="checkbox"/> Frozen	<input checked="" type="checkbox"/> Snow	<input type="checkbox"/> Other: (specify)	
Seasonal restrictions:	<input type="checkbox"/> Summer	<input type="checkbox"/> Winter	<input type="checkbox"/> Dates: (specify)		
Equipment types/restrictions: (rubber tires, tracks, cut-to-length, etc.) N/A					
Skid trail location/spacing: temp spur(s) may be needed (blind lead/deflection issues)					
Additional Information: Anticipating rot in the butt log					

HAZARD REDUCTION / SLASH TREATMENT					
Slash disposal:	<input checked="" type="checkbox"/> Pile & burn (landings)	<input type="checkbox"/> Pile & burn (in-woods)	<input type="checkbox"/> Broadcast burn	<input type="checkbox"/> Jackpot burn	
	<input type="checkbox"/> Masticate/Chip	<input type="checkbox"/> Lop & Scatter	<input type="checkbox"/> Hand Pile	<input type="checkbox"/> Other: (specify)	
Nutrient Retention:	Coarse woody debris (tons/ac): 5-15		<input type="checkbox"/> Return skid coarse/fine material		
Additional Information: in-woods long butting of rot or other defect will be encouraged					

SITE PREPARATION					
Method:	<input checked="" type="checkbox"/> Timber Sale/Dispersed Skidding	<input type="checkbox"/> Dozer	<input type="checkbox"/> Excavator	<input checked="" type="checkbox"/> Broadcast Burn	
	<input type="checkbox"/> Slash unwanted regeneration	<input type="checkbox"/> Chemical/Herbicide	<input type="checkbox"/> Other: (specify)		
Target % scarification:30%					
Additional Information:					

REGENERATION					
Type of Regeneration:	<input checked="" type="checkbox"/> Natural	<input checked="" type="checkbox"/> Planted	<input type="checkbox"/> Existing Advance		
<b>Fill in below if planting:</b>					
Estimated Number of Seedlings to Plant:					
Species:	<input type="checkbox"/> White Pine	<input checked="" type="checkbox"/> Western Larch	<input checked="" type="checkbox"/> Ponderosa Pine	<input type="checkbox"/> Douglas-fir	
	<input type="checkbox"/> Spruce	<input type="checkbox"/> Lodgepole Pine	<input type="checkbox"/> Other: (specify)		
Additional Information: unit will be assessed for RX burn post-harvest to help facilitate WL/PP regeneration/planting success					

ANTICIPATED FUTURE TREATMENTS
List approximate dates of post-harvest treatments, including: Slash disposal/hazard reduction: immediate post-harvest burning of slash piles (first burn window following drying period) Planting: as needed depending on seral species regeneration Regeneration survey: monitoring of seral species regeneration Evaluate for PCT: If seral species regeneration is excessive a PCT may follow in 5-15 years post-harvest Weeds: post-harvest weed mitigation as needed

<b>SALE/PROJECT NAME:</b> Beetlejuice	<b>DATE:</b> 3/1/2024
<b>CUTTING / TREATMENT UNIT NUMBER(s):</b> Unit 2	<b>ACRES:</b> APPROXIMATELY 220 acres
<b>LOCATION (TRS):</b> Section 36 T12N R16W	<b>EST. HARVEST VOLUME:</b> 1320 MBF
<b>WATERSHED:</b> Cramer Creek (Clark Fork River)	<b>ELEVATION:</b> 4800
<b>HABITAT TYPE(s):</b> PSME/PHMA-CARU phase (144 acres) PSME/SYAL-CARU phase (61 acres) PSME/FIED (15 acres)	<b>ASPECT:</b> All/Flat
<b>FIRE GROUP:</b> Group 4 (144 acres) Group 6 (61 acres) Group 5 (15 acres)	
<b>CURRENT COVER TYPE:</b> Douglas-fir	<b>SLOPE (%):</b> 0-35%
<b>DESIRED COVER TYPE:</b> Ponderosa Pine	<b>PREPARED BY:</b> Scott Allen

STAND DESCRIPTION
Large (greater than 12-inch dbh) relic ponderosa pine (PP) from previous cuts, as well as regeneration initiated during previous harvests, dominate the overstory. Large Douglas-fir (DF) and a few scattered western larch (WL) are also members of the overstory. In portions where large (greater than 12-inch dbh) DF consist of more than 20% of the overstory, the DF shows signs a loss of vigor and appears very unhealthy, showing signs of faded crowns with little to no growth. The mid-level canopy is a multi-age mix of 80% DF and 20% PP. Regeneration consists primarily of clumps of DF. The east facing portion of the unit consists primarily of two strata: DF 40%, PP 35%, and WL 5%. Most regeneration is comprised of advanced Douglas-fir. Douglas-fir bark beetles are very active and have been the cause of noticeable mortality. Knapweed and some cheatgrass are established within the unit.

TREATMENT OBJECTIVES	TARGET STAND CONDITIONS
<input checked="" type="checkbox"/> Move stands toward desired future conditions <input checked="" type="checkbox"/> Emulate natural disturbance regimes <input checked="" type="checkbox"/> Promote/establish regeneration <input checked="" type="checkbox"/> Enhance stand growth and vigor <input checked="" type="checkbox"/> Address insect and disease issues <input checked="" type="checkbox"/> Reduce fuel loading/fire hazard <input checked="" type="checkbox"/> Capture value of dead/dying timber <input checked="" type="checkbox"/> Generate revenue for the trust beneficiaries <input type="checkbox"/> Other: (specify)	An ITS (individual tree selection) prescription would be used to reduce overall basal area throughout the size class spectrum. Large, dominant early seral species (WL and PP) would be preferred for leave trees. All DF of inferior phenotype or showing signs of insect and disease, regardless of size, would be favored for cut trees. Targeting DF for removal would help move the current DF cover type toward the PP future desired condition. In addition, it would be expected to suppress the amount of DF insect and disease damage within the stand. Trees exhibiting dominant traits within their respective strata; i.e. good crown ratio or other signs of vigor, would be preferred to leave in all other size classes. In areas where multiple species of similar size and phenotypical attributes exist, the following species preference would be used to select leave trees: PP, WL, and DF.

PRESCRIBED TREATMENT			
Even-Aged Methods	Uneven-Aged Methods	Intermediate Treatments	Salvage Treatments
<input type="checkbox"/> Clearcutting <input type="checkbox"/> Seed Tree <input type="checkbox"/> Shelterwood <input type="checkbox"/> check if with reserves	<input checked="" type="checkbox"/> Individual Tree Selection <input type="checkbox"/> Group Selection <input type="checkbox"/> Old Growth Maintenance <input type="checkbox"/> Old Growth Restoration	<input type="checkbox"/> Overstory Removal <input type="checkbox"/> Commercial Thinning <input type="checkbox"/> Sanitation <input type="checkbox"/> Precommercial Thinning	<input type="checkbox"/> Fire Salvage <input type="checkbox"/> Insect / Disease Salvage <input type="checkbox"/> Weather/Blowdown Salvage <input type="checkbox"/> Other Salvage

HARVEST IMPLEMENTATION GUIDELINES	
Marking System:	<input type="checkbox"/> Cut Tree <input type="checkbox"/> Leave Tree <input checked="" type="checkbox"/> Sample Mark / Designate x Description <input type="checkbox"/> Species Designation
Number/Spacing/Size of Leave Trees:	ITS – PP> 20 in 40-50 foot spacing Other> 20-30 foot spacing
Species Preference:	PP, WL, DF
Characteristics of cut or leave trees:	Phenotypically superior trees
Number of Snags/Snag Recruits:	Greater than 2 snags where available and 2 recruits
Additional Information:	Small sample marked, with cut by prescription

HARVEST METHOD					
Yarding:	<input checked="" type="checkbox"/> Tractor	<input type="checkbox"/> Skyline	<input type="checkbox"/> Combination	<input type="checkbox"/> Excaline	<input type="checkbox"/> Other: (specify)
Ground conditions:	<input checked="" type="checkbox"/> Dry	<input checked="" type="checkbox"/> Frozen	<input checked="" type="checkbox"/> Snow	<input type="checkbox"/> Other: (specify)	
Seasonal restrictions:	<input type="checkbox"/> Summer	<input type="checkbox"/> Winter	<input type="checkbox"/> Dates: (specify)		
Equipment types/restrictions: (rubber tires, tracks, cut-to-length, etc.) N/A					
Skid trail location/spacing: dispersed skidding, one main trail or catch trail on adverse portions of the unit					
Additional Information:					

HAZARD REDUCTION / SLASH TREATMENT					
Slash disposal:	<input checked="" type="checkbox"/> Pile & burn (landings)	<input type="checkbox"/> Pile & burn (in-woods)	<input type="checkbox"/> Broadcast burn	<input type="checkbox"/> Jackpot burn	
	<input type="checkbox"/> Masticate/Chip	<input type="checkbox"/> Lop & Scatter	<input type="checkbox"/> Hand Pile	<input type="checkbox"/> Other: (specify)	
Nutrient Retention: Coarse woody debris (tons/ac):	<input checked="" type="checkbox"/> Return skid coarse/fine material				
Additional Information: If unit is whole tree skid, some small amounts of slash will be returned to the unit in the form of skid trail erosion control. Long butting of any defect in large diameter logs will be encouraged					

SITE PREPARATION					
Method:	<input checked="" type="checkbox"/> Timber Sale/Dispersed Skidding	<input type="checkbox"/> Dozer	<input type="checkbox"/> Excavator	<input type="checkbox"/> Broadcast Burn	
	<input type="checkbox"/> Slash unwanted regeneration	<input type="checkbox"/> Chemical/Herbicide	<input type="checkbox"/> Other: (specify)		
Target % scarification: 20%					
Additional Information: dispersed skidding will encourage natural ponderosa pine and western larch regeneration					

REGENERATION					
Type of Regeneration:	<input checked="" type="checkbox"/> Natural	<input type="checkbox"/> Planted	<input checked="" type="checkbox"/> Existing Advance		
<b>Fill in below if planting:</b>					
Estimated Number of Seedlings to Plant:					
Species:	<input type="checkbox"/> White Pine	<input type="checkbox"/> Western Larch	<input type="checkbox"/> Ponderosa Pine	<input type="checkbox"/> Douglas-fir	
	<input type="checkbox"/> Spruce	<input type="checkbox"/> Lodgepole Pine	<input type="checkbox"/> Other: (specify)		
Additional Information:					

ANTICIPATED FUTURE TREATMENTS
List approximate dates of post-harvest treatments, including: Slash disposal/hazard reduction: immediate post-harvest burning of slash Planting: as needed depending on seral species regeneration Regeneration survey: monitoring of seral species regeneration Evaluate for PCT: If seral species regeneration is excessive a PCT may follow in 5-15 years post-harvest Weeds: post-harvest weed mitigation as needed



<b>SALE/PROJECT NAME:</b> Beetlejuice	<b>DATE:</b> 3/1/2024
<b>CUTTING / TREATMENT UNIT NUMBER(s):</b> Unit 3	<b>ACRES:</b> APPROXIMATELY 24 acres
<b>LOCATION (TRS):</b> Section 36 T12N R16W	<b>EST. HARVEST VOLUME:</b> 90 MBF
<b>WATERSHED:</b> Cramer Creek (Clark Fork River)	<b>ELEVATION:</b> 5000
<b>HABITAT TYPE(s):</b> PSME/PHMA-CARU phase	<b>ASPECT:</b> SW
<b>FIRE GROUP:</b> Group 4	
<b>CURRENT COVER TYPE:</b> Ponderosa Pine	<b>SLOPE (%):</b> 30-60%
<b>DESIRED COVER TYPE:</b> Ponderosa Pine	<b>PREPARED BY:</b> Scott Allen

STAND DESCRIPTION
Unit 3 consists of a SW aspect stand with multiple (uneven-aged) strata consisting of approximately 70% ponderosa pine and 30% Douglas-fir throughout the 3 or more strata. Natural openings of non-stocked areas are scattered throughout the unit. There are low to moderate stocking levels in the upper strata or largest size class. The majority of the stems present represent the middle strata. The regeneration (youngest strata) has low to moderate stocking levels. Knapweed and some cheatgrass are established within the unit.

TREATMENT OBJECTIVES	TARGET STAND CONDITIONS
<input checked="" type="checkbox"/> Move stands toward desired future conditions	An ITS (individual tree selection) prescription would be used to reduce overall basal area throughout the size class spectrum. The largest, dominant early seral species PP would be preferred for leave trees. All DF of inferior phenotype or showing signs of insect and disease, regardless of size, would be favored for cut trees. Targeting DF for removal would help maintain PP cover type (PP future desired condition). In addition, it would be expected to suppress the amount of DF insect and disease damage within the stand. Trees exhibiting dominant traits within their respective strata; i.e. good crown ratio or other signs of vigor, would be preferred to leave in all other size classes. In areas where multiple species of similar size and phenotypical attributes exist the following species preference would be used to select leave trees: PP, WL, and DF.
<input checked="" type="checkbox"/> Emulate natural disturbance regimes	
<input checked="" type="checkbox"/> Promote/establish regeneration	
<input checked="" type="checkbox"/> Enhance stand growth and vigor	
<input checked="" type="checkbox"/> Address insect and disease issues	
<input checked="" type="checkbox"/> Reduce fuel loading/fire hazard	
<input checked="" type="checkbox"/> Capture value of dead/dying timber	
<input checked="" type="checkbox"/> Generate revenue for the trust beneficiaries	
<input type="checkbox"/> Other: (specify)	

PRESCRIBED TREATMENT			
Even-Aged Methods	Uneven-Aged Methods	Intermediate Treatments	Salvage Treatments
<input type="checkbox"/> Clearcutting	<input checked="" type="checkbox"/> Individual Tree Selection	<input type="checkbox"/> Overstory Removal	<input type="checkbox"/> Fire Salvage
<input type="checkbox"/> Seed Tree	<input type="checkbox"/> Group Selection	<input type="checkbox"/> Commercial Thinning	<input type="checkbox"/> Insect / Disease Salvage
<input type="checkbox"/> Shelterwood	<input type="checkbox"/> Old Growth Maintenance	<input type="checkbox"/> Sanitation	<input type="checkbox"/> Weather/Blowdown Salvage
<input type="checkbox"/> check if with reserves	<input type="checkbox"/> Old Growth Restoration	<input type="checkbox"/> Precommercial Thinning	<input type="checkbox"/> Other Salvage

HARVEST IMPLEMENTATION GUIDELINES	
Marking System:	<input type="checkbox"/> Cut Tree <input type="checkbox"/> Leave Tree <input checked="" type="checkbox"/> Sample Mark / Designate x Description <input type="checkbox"/> Species Designation
Number/Spacing/Size of Leave Trees:	ITS – PP> 20in 40-50 foot spacing Other> 20-30 foot spacing
Species Preference:	PP, DF
Characteristics of cut or leave trees:	Phenotypic superior trees
Number of Snags/Snag Recruits:	Greater than 2 snags where available and 2 recruits
Additional Information:	Small sample marked, with cut by prescription

HARVEST METHOD					
Yarding:	<input type="checkbox"/> Tractor	<input checked="" type="checkbox"/> Skyline	<input type="checkbox"/> Combination	<input checked="" type="checkbox"/> Excavator	<input type="checkbox"/> Other: (specify)
Ground conditions:	<input checked="" type="checkbox"/> Dry	<input checked="" type="checkbox"/> Frozen	<input checked="" type="checkbox"/> Snow	<input type="checkbox"/> Other: (specify)	
Seasonal restrictions:	<input type="checkbox"/> Summer	<input checked="" type="checkbox"/> Winter	<input type="checkbox"/> Dates: (specify)		

Equipment types/restrictions: (rubber tires, tracks, cut-to-length, etc.) N/A
Skid trail location/spacing:
Additional Information:

HAZARD REDUCTION / SLASH TREATMENT	
Slash disposal: <input checked="" type="checkbox"/> Pile & burn (landings) <input type="checkbox"/> Pile & burn (in-woods) <input type="checkbox"/> Broadcast burn <input type="checkbox"/> Jackpot burn <input type="checkbox"/> Masticate/Chip <input type="checkbox"/> Lop & Scatter <input type="checkbox"/> Hand Pile <input type="checkbox"/> Other: (specify)	
Nutrient Retention: Coarse woody debris (tons/ac):	<input checked="" type="checkbox"/> Return skid coarse/fine material
Additional Information: If unit is whole tree skid, some small amounts of slash will be returned to the unit in the form of skid trail erosion control. Long butting of any defect in large diameter logs will be encouraged	

SITE PREPARATION	
Method: <input checked="" type="checkbox"/> Timber Sale/Dispersed Skidding <input type="checkbox"/> Dozer <input type="checkbox"/> Excavator <input type="checkbox"/> Broadcast Burn <input type="checkbox"/> Slash unwanted regeneration <input type="checkbox"/> Chemical/Herbicide <input type="checkbox"/> Other: (specify)	
Target % scarification: 30%	
Additional Information: scarification targets may be hard to obtain due to line yarding	

REGENERATION	
Type of Regeneration: <input checked="" type="checkbox"/> Natural <input checked="" type="checkbox"/> Planted <input type="checkbox"/> Existing Advance	
<b>Fill in below if planting:</b>	
Estimated Number of Seedlings to Plant:	
Species: <input type="checkbox"/> White Pine <input type="checkbox"/> Western Larch <input checked="" type="checkbox"/> Ponderosa Pine <input type="checkbox"/> Douglas-fir <input type="checkbox"/> Spruce <input type="checkbox"/> Lodgepole Pine <input type="checkbox"/> Other: (specify)	
Additional Information:	

ANTICIPATED FUTURE TREATMENTS
<p>List approximate dates of post-harvest treatments, including:</p> <p>Slash disposal/hazard reduction: immediate post-harvest burning of slash</p> <p>Planting: as needed depending on seral species regeneration</p> <p>Regeneration survey: monitoring of seral species regeneration</p> <p>Evaluate for PCT: If seral species regeneration is excessive a PCT may follow in 5-15 years post-harvest</p> <p>Weeds: post-harvest weed mitigation as needed</p>

<b>SALE/PROJECT NAME:</b> Beetlejuice	<b>DATE:</b> 3/1/2024
<b>CUTTING / TREATMENT UNIT NUMBER(s):</b> Unit 4	<b>ACRES:</b> APPROXIMATELY 11 acres
<b>LOCATION (TRS):</b> Section 36 T12N R16W	<b>EST. HARVEST VOLUME:</b> 40 MBF
<b>WATERSHED:</b> Cramer Creek (Clark Fork River)	<b>ELEVATION:</b> 5400
<b>HABITAT TYPE(s):</b> PSME/PHMA-CARU phase	<b>ASPECT:</b> SW
<b>FIRE GROUP:</b> Group 4	
<b>CURRENT COVER TYPE:</b> Ponderosa Pine	<b>SLOPE (%):</b> 30-60%
<b>DESIRED COVER TYPE:</b> Ponderosa Pine	<b>PREPARED BY:</b> Scott Allen

STAND DESCRIPTION
Unit 4 consists of a SW aspect stand that has multiple (uneven-aged) strata consisting of approximately 70% ponderosa pine and 30% Douglas-fir throughout the 3 or more strata. Natural openings of non-stocked areas are scattered throughout the unit. There are low to moderate stocking levels in the upper strata or largest size class. The majority of the stems present represent the middle strata. The regeneration (youngest strata) has low to moderate stocking levels. Knapweed and some cheatgrass are established within the unit. .

TREATMENT OBJECTIVES	TARGET STAND CONDITIONS
<input checked="" type="checkbox"/> Move stands toward desired future conditions	An ITS (individual tree selection) prescription would be used to reduce overall basal area throughout the size class spectrum. The largest, dominant early seral species PP would be preferred for leave trees. All DF of inferior phenotype or showing signs of insect and disease, regardless of size, would be favored for cut trees. Targeting DF for removal would help maintain PP cover type (PP future desired condition). In addition, it would be expected to suppress the amount of DF insect and disease damage within the stand. Trees exhibiting dominant traits within their respective strata; i.e. good crown ratio or other signs of vigor, would be preferred to leave in all other size classes. In areas where multiple species of similar size and phenotypical attributes exist the following species preference would be used to select leave trees: PP, WL, and DF.
<input checked="" type="checkbox"/> Emulate natural disturbance regimes	
<input checked="" type="checkbox"/> Promote/establish regeneration	
<input checked="" type="checkbox"/> Enhance stand growth and vigor	
<input checked="" type="checkbox"/> Address insect and disease issues	
<input checked="" type="checkbox"/> Reduce fuel loading/fire hazard	
<input checked="" type="checkbox"/> Capture value of dead/dying timber	
<input checked="" type="checkbox"/> Generate revenue for the trust beneficiaries	
<input type="checkbox"/> Other: (specify)	

PRESCRIBED TREATMENT			
Even-Aged Methods	Uneven-Aged Methods	Intermediate Treatments	Salvage Treatments
<input type="checkbox"/> Clearcutting	<input checked="" type="checkbox"/> Individual Tree Selection	<input type="checkbox"/> Overstory Removal	<input type="checkbox"/> Fire Salvage
<input type="checkbox"/> Seed Tree	<input type="checkbox"/> Group Selection	<input type="checkbox"/> Commercial Thinning	<input type="checkbox"/> Insect / Disease Salvage
<input type="checkbox"/> Shelterwood	<input type="checkbox"/> Old Growth Maintenance	<input type="checkbox"/> Sanitation	<input type="checkbox"/> Weather/Blowdown Salvage
<input type="checkbox"/> check if with reserves	<input type="checkbox"/> Old Growth Restoration	<input type="checkbox"/> Precommercial Thinning	<input type="checkbox"/> Other Salvage

HARVEST IMPLEMENTATION GUIDELINES	
Marking System:	<input type="checkbox"/> Cut Tree <input type="checkbox"/> Leave Tree <input checked="" type="checkbox"/> Sample Mark / Designate x Description <input type="checkbox"/> Species Designation
Number/Spacing/Size of Leave Trees:	ITS – PP> 20 in 40-50 foot spacing Other> 20-30 foot spacing
Species Preference:	PP, DF
Characteristics of cut or leave trees:	Phenotypic superior trees
Number of Snags/Snag Recruits:	Greater than 2 snags where available and 2 recruits
Additional Information:	Small sample marked, with cut by prescription

HARVEST METHOD					
Yarding:	<input checked="" type="checkbox"/> Tractor	<input type="checkbox"/> Skyline	<input type="checkbox"/> Combination	<input type="checkbox"/> Excaline	<input type="checkbox"/> Other: (specify)
Ground conditions:	<input checked="" type="checkbox"/> Dry	<input checked="" type="checkbox"/> Frozen	<input checked="" type="checkbox"/> Snow	<input type="checkbox"/> Other: (specify)	
Seasonal restrictions:	<input type="checkbox"/> Summer	<input checked="" type="checkbox"/> Winter	<input type="checkbox"/> Dates: (specify)		

Equipment types/restrictions: (rubber tires, tracks, cut-to-length, etc.) N/A
Skid trail location/spacing:
Additional Information:

HAZARD REDUCTION / SLASH TREATMENT	
Slash disposal: <input checked="" type="checkbox"/> Pile & burn (landings) <input type="checkbox"/> Pile & burn (in-woods) <input type="checkbox"/> Broadcast burn <input type="checkbox"/> Jackpot burn <input type="checkbox"/> Masticate/Chip <input type="checkbox"/> Lop & Scatter <input type="checkbox"/> Hand Pile <input type="checkbox"/> Other: (specify)	
Nutrient Retention: Coarse woody debris (tons/ac):	<input checked="" type="checkbox"/> Return skid coarse/fine material
Additional Information: If unit is whole tree skid, some small amounts of slash will be returned to the unit in the form of skid trail erosion control. Long butting of any defect in large diameter logs will be encouraged	

SITE PREPARATION	
Method: <input checked="" type="checkbox"/> Timber Sale/Dispersed Skidding <input type="checkbox"/> Dozer <input type="checkbox"/> Excavator <input type="checkbox"/> Broadcast Burn <input type="checkbox"/> Slash unwanted regeneration <input type="checkbox"/> Chemical/Herbicide <input type="checkbox"/> Other: (specify)	
Target % scarification:30%	
Additional Information:	

REGENERATION	
Type of Regeneration: <input checked="" type="checkbox"/> Natural <input checked="" type="checkbox"/> Planted <input type="checkbox"/> Existing Advance	
<b>Fill in below if planting:</b>	
Estimated Number of Seedlings to Plant:	
Species: <input type="checkbox"/> White Pine <input type="checkbox"/> Western Larch <input checked="" type="checkbox"/> Ponderosa Pine <input type="checkbox"/> Douglas-fir <input type="checkbox"/> Spruce <input type="checkbox"/> Lodgepole Pine <input type="checkbox"/> Other: (specify)	
Additional Information:	

ANTICIPATED FUTURE TREATMENTS
List approximate dates of post-harvest treatments, including: Slash disposal/hazard reduction: immediate post-harvest burning of slash Planting: as needed depending on seral species regeneration Regeneration survey: monitoring of seral species regeneration Evaluate for PCT: If seral species regeneration is excessive a PCT may follow in 5-15 years post-harvest Weeds: post-harvest weed mitigation as needed

<b>SALE/PROJECT NAME:</b> Beetlejuice	<b>DATE:</b> 3/1/2024
<b>CUTTING / TREATMENT UNIT NUMBER(s):</b> Unit 5	<b>ACRES:</b> APPROXIMATELY 52 acres
<b>LOCATION (TRS):</b> Section 2 T11N R16W	<b>EST. HARVEST VOLUME:</b> 182 MBF
<b>WATERSHED:</b> Cramer Creek (Clark Fork River)	<b>ELEVATION:</b> 4800
<b>HABITAT TYPE(s):</b> PSME/CAGE (22 acres) PSME/PHMA-CARU phase (26 acres) PSME/FESC (4) acres	<b>ASPECT:</b> SW/W/NW
<b>FIRE GROUP:</b> Group 4 (28 acres) Group 5 (22 acres)	
<b>CURRENT COVER TYPE:</b> Ponderosa Pine	<b>SLOPE (%):</b> 30-50%
<b>DESIRED COVER TYPE:</b> Ponderosa Pine	<b>PREPARED BY:</b> Scott Allen

STAND DESCRIPTION
Unit 5 consists of a mix of two differing uneven-aged stands delineated primarily on aspect. The portions of the unit that are more westerly and northerly facing consist of a Douglas-fir dominated overstory, mid-level strata, and regeneration (approximately 70% DF), with PP also present (approximately 30%). The portions of the unit on a southern aspect consist of a ponderosa pine dominated over-story (approximately 70%) with Douglas-fir (approximately 30%). The mid-tiered strata, as well as the regeneration, is represented more predominately by Douglas-fir (approximately 80% DF 20% PP). All species across the unit show signs of reduced vigor and insect and disease damage due to competition for resources. Knapweed and some cheatgrass are established within the unit.

TREATMENT OBJECTIVES	TARGET STAND CONDITIONS
<input checked="" type="checkbox"/> Move stands toward desired future conditions <input checked="" type="checkbox"/> Emulate natural disturbance regimes <input checked="" type="checkbox"/> Promote/establish regeneration <input checked="" type="checkbox"/> Enhance stand growth and vigor <input checked="" type="checkbox"/> Address insect and disease issues <input checked="" type="checkbox"/> Reduce fuel loading/fire hazard <input checked="" type="checkbox"/> Capture value of dead/dying timber <input checked="" type="checkbox"/> Generate revenue for the trust beneficiaries <input type="checkbox"/> Other: (specify)	An ITS (individual tree selection) prescription would be used to reduce overall basal area throughout the size class spectrum. The largest, dominant early seral species PP would be preferred for leave trees. All DF of inferior phenotype or showing signs of insect and disease, regardless of size, would be favored for cut trees. Targeting DF for removal would help maintain or move the current cover type (PP future desired condition). In addition, it would be expected to suppress the amount of DF insect and disease damage within the stand. Trees exhibiting dominant traits within their respective strata; i.e. good crown ratio or other signs of vigor, would be preferred to leave in all other size classes. In areas where multiple species of similar size and phenotypical attributes exist the following species preference would be used to select leave trees: PP and DF.

PRESCRIBED TREATMENT			
Even-Aged Methods	Uneven-Aged Methods	Intermediate Treatments	Salvage Treatments
<input type="checkbox"/> Clearcutting <input type="checkbox"/> Seed Tree <input type="checkbox"/> Shelterwood <input type="checkbox"/> check if with reserves	<input checked="" type="checkbox"/> Individual Tree Selection <input type="checkbox"/> Group Selection <input type="checkbox"/> Old Growth Maintenance <input type="checkbox"/> Old Growth Restoration	<input type="checkbox"/> Overstory Removal <input type="checkbox"/> Commercial Thinning <input type="checkbox"/> Sanitation <input type="checkbox"/> Precommercial Thinning	<input type="checkbox"/> Fire Salvage <input type="checkbox"/> Insect / Disease Salvage <input type="checkbox"/> Weather/Blowdown Salvage <input type="checkbox"/> Other Salvage

HARVEST IMPLEMENTATION GUIDELINES	
Marking System:	<input type="checkbox"/> Cut Tree <input type="checkbox"/> Leave Tree <input checked="" type="checkbox"/> Sample Mark / Designate x Description <input type="checkbox"/> Species Designation
Number/Spacing/Size of Leave Trees:	ITS – PP> 20 in 40-50 foot spacing Other> 20-30 foot spacing
Species Preference:	PP, DF
Characteristics of cut or leave trees:	Phenotypic superior trees
Number of Snags/Snag Recruits:	Greater than 2 snags where available and 2 recruits
Additional Information:	Small sample marked, with cut by prescription

HARVEST METHOD					
Yarding:	<input type="checkbox"/> Tractor	<input checked="" type="checkbox"/> Skyline	<input type="checkbox"/> Combination	<input type="checkbox"/> Excaline	<input type="checkbox"/> Other: (specify)
Ground conditions:	<input checked="" type="checkbox"/> Dry	<input checked="" type="checkbox"/> Frozen	<input checked="" type="checkbox"/> Snow	<input type="checkbox"/> Other: (specify)	
Seasonal restrictions:	<input type="checkbox"/> Summer	<input checked="" type="checkbox"/> Winter	<input type="checkbox"/> Dates: (specify)		
Equipment types/restrictions: (rubber tires, tracks, cut-to-length, etc.) N/A					
Skid trail location/spacing:					
Additional Information:					

HAZARD REDUCTION / SLASH TREATMENT					
Slash disposal:	<input checked="" type="checkbox"/> Pile & burn (landings)	<input type="checkbox"/> Pile & burn (in-woods)	<input type="checkbox"/> Broadcast burn	<input type="checkbox"/> Jackpot burn	
	<input type="checkbox"/> Masticate/Chip	<input type="checkbox"/> Lop & Scatter	<input type="checkbox"/> Hand Pile	<input type="checkbox"/> Other: (specify)	
Nutrient Retention: Coarse woody debris (tons/ac):	<input checked="" type="checkbox"/> Return skid coarse/fine material				
Additional Information: If unit is whole tree skid, some small amounts of slash will be returned to the unit in the form of skid trail erosion control. Long butting of any defect in large diameter logs will be encouraged					

SITE PREPARATION					
Method:	<input checked="" type="checkbox"/> Timber Sale/Dispersed Skidding	<input type="checkbox"/> Dozer	<input type="checkbox"/> Excavator	<input type="checkbox"/> Broadcast Burn	
	<input type="checkbox"/> Slash unwanted regeneration	<input type="checkbox"/> Chemical/Herbicide	<input type="checkbox"/> Other: (specify)		
Target % scarification:30%					
Additional Information:					

REGENERATION					
Type of Regeneration:	<input checked="" type="checkbox"/> Natural	<input checked="" type="checkbox"/> Planted	<input type="checkbox"/> Existing Advance		
<b>Fill in below if planting:</b>					
Estimated Number of Seedlings to Plant:					
Species:	<input type="checkbox"/> White Pine	<input type="checkbox"/> Western Larch	<input checked="" type="checkbox"/> Ponderosa Pine	<input type="checkbox"/> Douglas-fir	
	<input type="checkbox"/> Spruce	<input type="checkbox"/> Lodgepole Pine	<input type="checkbox"/> Other: (specify)		
Additional Information:					

ANTICIPATED FUTURE TREATMENTS
<p>List approximate dates of post-harvest treatments, including:</p> <p>Slash disposal/hazard reduction: immediate post-harvest burning of slash</p> <p>Planting: as needed depending on seral species regeneration</p> <p>Regeneration survey: monitoring of seral species regeneration</p> <p>Evaluate for PCT: If seral species regeneration is excessive a PCT may follow in 5-15 years post-harvest</p> <p>Weeds: post-harvest weed mitigation as needed</p>

<b>SALE/PROJECT NAME:</b> Beetlejuice	<b>DATE:</b> 3/1/2024
<b>CUTTING / TREATMENT UNIT NUMBER(s):</b> Unit 6	<b>ACRES:</b> APPROXIMATELY 13 acres
<b>LOCATION (TRS):</b> Section 2 T11N R16W	<b>EST. HARVEST VOLUME:</b> 45 MBF
<b>WATERSHED:</b> Cramer Creek (Clark Fork River)	<b>ELEVATION:</b> 4200
<b>HABITAT TYPE(s):</b> PSME/FESC <b>FIRE GROUP:</b> Group 4	<b>ASPECT:</b> S/SW
<b>CURRENT COVER TYPE:</b> Ponderosa Pine	<b>SLOPE (%):</b> 10-50%
<b>DESIRED COVER TYPE:</b> Ponderosa Pine	<b>PREPARED BY:</b> Scott Allen

STAND DESCRIPTION
Unit 6 consists of a relatively uniform stand of 6-12" DBH ponderosa pine. At this time the unit appears healthy but has low to medium vigor due to overstocking.

TREATMENT OBJECTIVES	TARGET STAND CONDITIONS
<input type="checkbox"/> Move stands toward desired future conditions <input checked="" type="checkbox"/> Emulate natural disturbance regimes <input type="checkbox"/> Promote/establish regeneration <input checked="" type="checkbox"/> Enhance stand growth and vigor <input checked="" type="checkbox"/> Address insect and disease issues <input checked="" type="checkbox"/> Reduce fuel loading/fire hazard <input type="checkbox"/> Capture value of dead/dying timber <input checked="" type="checkbox"/> Generate revenue for the trust beneficiaries <input type="checkbox"/> Other: (specify)	A commercial thin prescription would be used to reduce basal area. The dominant PP exhibiting the fullest crown and vigor would be preferred for leave trees. Larger diameter trees would be spaced to meet a BA (basal area) of approximately 40-50.

PRESCRIBED TREATMENT			
Even-Aged Methods	Uneven-Aged Methods	Intermediate Treatments	Salvage Treatments
<input type="checkbox"/> Clearcutting <input type="checkbox"/> Seed Tree <input type="checkbox"/> Shelterwood <input type="checkbox"/> check if with reserves	<input type="checkbox"/> Individual Tree Selection <input type="checkbox"/> Group Selection <input type="checkbox"/> Old Growth Maintenance <input type="checkbox"/> Old Growth Restoration	<input type="checkbox"/> Overstory Removal <input checked="" type="checkbox"/> Commercial Thinning <input type="checkbox"/> Sanitation <input type="checkbox"/> Precommercial Thinning	<input type="checkbox"/> Fire Salvage <input type="checkbox"/> Insect / Disease Salvage <input type="checkbox"/> Weather/Blowdown Salvage <input type="checkbox"/> Other Salvage

HARVEST IMPLEMENTATION GUIDELINES	
Marking System:	<input type="checkbox"/> Cut Tree <input type="checkbox"/> Leave Tree <input checked="" type="checkbox"/> Sample Mark / Designate x Description <input type="checkbox"/> Species Designation
Number/Spacing/Size of Leave Trees:	Commercial thin to 40-50 basal area
Species Preference:	PP
Characteristics of cut or leave trees:	Phenotypic superior trees
Number of Snags/Snag Recruits:	Greater than 2 snags where available and 2 recruits
Additional Information:	

HARVEST METHOD				
Yarding:	<input type="checkbox"/> Tractor <input type="checkbox"/> Skyline <input checked="" type="checkbox"/> Combination <input type="checkbox"/> Excaline <input type="checkbox"/> Other: (specify)			
Ground conditions:	<input checked="" type="checkbox"/> Dry <input checked="" type="checkbox"/> Frozen <input checked="" type="checkbox"/> Snow <input type="checkbox"/> Other: (specify)			
Seasonal restrictions:	<input type="checkbox"/> Summer <input checked="" type="checkbox"/> Winter <input type="checkbox"/> Dates: (specify)			
Equipment types/restrictions: (rubber tires, tracks, cut-to-length, etc.)	N/A			

Skid trail location/spacing: a catch trail above the cut slope or adverse skidding may be required.  
 Additional Information:

**HAZARD REDUCTION / SLASH TREATMENT**

Slash disposal:  Pile & burn (landings)    Pile & burn (in-woods)    Broadcast burn    Jackpot burn  
 Masticate/Chip    Lop & Scatter    Hand Pile    Other: (specify)  
 Nutrient Retention: Coarse woody debris (tons/ac):  Return skid coarse/fine material  
 Additional Information:

**SITE PREPARATION**

Method:  Timber Sale/Dispersed Skidding    Dozer    Excavator    Broadcast Burn  
 Slash unwanted regeneration    Chemical/Herbicide    Other: (specify)  
 Target % scarification:  
 Additional Information: Intermediate treatment, regeneration is not an objective

**REGENERATION**

Type of Regeneration:  Natural    Planted    Existing Advance  
**Fill in below if planting:**  
 Estimated Number of Seedlings to Plant:  
 Species:  White Pine    Western Larch    Ponderosa Pine    Douglas-fir  
 Spruce    Lodgepole Pine    Other: (specify)  
 Additional Information:

**ANTICIPATED FUTURE TREATMENTS**

List approximate dates of post-harvest treatments, including:  
 Slash disposal/hazard reduction: immediate post-harvest burning of slash  
 Planting: as needed depending on seral species regeneration  
 Weeds: post-harvest weed mitigation as needed